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TREASURY DEPARTMENT.
Public Health and Marine-Hospital Service of the United States.
WALTER WYMAN, Surgeon-General.

HYGIENIC LABORATORY.—BULLETIN No. 23.
AUGUST 1, 1905.

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CHANGES IN
THE PHARMACOPŒIA OF THE UNITED STATES OF AMERICA

EIGHTH DECENNIAL REVISION.

(Official from September 1, 1905.)

By

REID HUNT
and
MURRAY GALT MOTTER.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1905.

NOTICE TO LIBRARIANS AND BIBLIOGRAPHERS CONCERNING THE SERIAL PUBLICATIONS OF THIS LABORATORY.

The Hygienic Laboratory was established in New York, at the Marine Hospital on Staten Island, August, 1887. It was transferred to Washington, with quarters in the Butler Building, June 11, 1891, and a new laboratory building, located in Washington, was authorized by act of Congress, March 3, 1901.

The following *bulletins* [Bulls. Nos. 1-7, 1900 to 1902, Hyg. Lab., U. S. Mar.-Hosp. Serv., Wash.] have been issued:

No. 1.—Preliminary note on the viability of the *Bacillus pestis.* By M. J. Rosenau.

No. 2.—Formalin disinfection of baggage without apparatus. By M. J. Rosenau.

No. 3.—Sulphur dioxide as a germicidal agent. By H. D. Geddings.

No. 4.—Viability of the *Bacillus pestis.* By M. J. Rosenau.

No. 5.—An investigation of a pathogenic microbe (*B. typhi murium* Danyz) applied to the destruction of rats. By M. J. Rosenau.

No. 6.—Disinfection against mosquitoes with formaldehyd and sulphur dioxid. By M. J. Rosenau.

No. 7.—Laboratory technique: Ring test for indol, by S. B. Grubbs and Edward Francis; Collodium sacs, by S. B. Grubbs and Edward Francis; Microphotography with simple apparatus, by H. B. Parker.

By act of Congress, approved July 1, 1902, the name of the "United States Marine-Hospital Service" was changed to the "Public Health and Marine-Hospital Service of the United States," and three new divisions were added to the Hygienic Laboratory.

Since the change of name of the Service the bulletins of the Hygienic Laboratory have been continued in the same numerical order, as follows:

No. 8.—Laboratory course in pathology and bacteriology. By M. J. Rosenau. (Revised edition March, 1904.)

No. 9.—Presence of tetanus in commercial gelatin. By John F. Anderson.

No. 10.—Report upon the prevalence and geographic distribution of hookworm disease (uncinariasis or anchylostomiasis) in the United States. By Ch. Wardell Stiles.

No. 11.—An experimental investigation of *Trypanosoma lewisi.* By Edward Francis.

No. 12.—The bacteriological impurities of vaccine virus; an experimental study. By M. J. Rosenau.

No. 13.—A statistical study of the intestinal parasites of 500 white male patients at the United States Government Hospital for the Insane; by Philip E. Garrison, Brayton H. Ransom, and Earle C. Stevenson. A parasitic roundworm (*Agamomermis culicis* n. g., n. sp.) in American mosquitoes (*Culex sollicitans*); by Ch. Wardell Stiles. The type species of the cestode genus *Hymenolepis;* by Ch. Wardell Stiles.

No. 14.—Spotted fever (tick fever) of the Rocky Mountains; a new disease. By John F. Anderson.

No. 15.—Inefficiency of ferrous sulphate as an antiseptic and germicide. By Allan J. McLaughlin.

No. 16.—The antiseptic and germicidal properties of glycerin. By M. J. Rosenau.

No. 17.—Illustrated key to the trematode parasites of man. By Ch. Wardell Stiles.

No. 18.—An account of the tapeworms of the genus *Hymenolepis* parasitic in man, including reports of several new cases of the dwarf tapeworm (*H. nana*) in the United States. By Brayton H. Ransom.

(Continued on third page of cover.)

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Public Health and Marine-Hospital Service of the United States.

WALTER WYMAN, Surgeon-General.

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Authority to use for comment the Pharmacopœia of the United States of America, Eighth Decennial Revision, in this volume, has been granted by the Board of Trustees of the United States Pharmacopœial Convention, which Board of Trustees is in no way responsible for the accuracy of any translation of the official weights and measures, or for any statements as to strength of official preparations.

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ABBREVIATIONS.

Br. P	British Pharmacopœia, 1898.
P. G	Pharmacopœa Germanica IV.
T. S	U. S. P. Test Solution.
N. F	National Formulary (1896).

CHANGES

IN THE

PHARMACOPŒIA OF THE UNITED STATES OF AMERICA, EIGHTH DECENNIAL REVISION.

(Official from September 1, 1905.)

By Reid Hunt, M. D.,

Chief of Division of Pharmacology, U. S. Public Health and Marine-Hospital Service,

And Murray Galt Motter, M. D.,

Professor of Physiology, Medical Department Georgetown University; Secretary of the Board of Trustees, U. S. Pharmacopœial Convention; Temporary Assistant in the Hygienic Laboratory, U. S. Public Health and Marine-Hospital Service.

INTRODUCTION.[a]

ORIGIN AND SCOPE OF BULLETIN.

The United States Pharmacopœia is the official standard for the U. S. Public Health and Marine-Hospital Service. Drugs purchased for its hospitals and relief stations must conform to the Pharmacopœial requirements. A circular letter, calling the attention of the medical officers and pharmacists of the Service to the many and important changes in the revised edition, was at first contemplated. It was believed that such a letter would aid these officials in their study of the revised Pharmacopœia and facilitate the early adoption of the new names and new preparations. Later, with the approval of the Board of Trustees of the Pharmacopœial Convention, it was decided to publish this information in the form of a bulletin. It is believed that such a bulletin will help the practitioner to a better understanding of the significance of some of the innovations. Being written for physicians, only such changes are discussed in this bulletin as are of interest and use to them, such, for example, as changes in the strength of preparations, changes in name, the additions, etc. For changes relating to methods of preparation, of tests for identity, purity, etc., the reader is referred to the Pharmacopœia itself.

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[a] The authors are greatly indebted to Dr. Daniel Base, of the Division of Pharmacology, for valuable assistance rendered in the preparation of this bulletin.

Special attention is directed to the following points:

1. Terminology.—The general plan regarding terminology is expressed in the following extract from the General Principles to be Followed in Revising the Pharmacopœia, adopted by the Pharmacopœial Convention of 1900:

"* * * In the case of newly admitted articles it is recommended that such titles be chosen as are in harmony with general usage and convenient for prescribing; but in the case of chemicals of a definite composition a scientific name should be given, at least as a synonym."

In accordance with this general principle a large number of synthetic remedies have been admitted into the Pharmacopœia, not under their trade or commercial names by which many are well known to the profession, but, in most cases, under names approximating, as closely as practicable, their true chemical names. Thus "Phenacetin" is admitted as *Acetphenetidinum*, a name which shows at once that this substance belongs to the great group of phenetidin compounds. "Aristol" is admitted as *Thymolis Iodidum*, a name showing that this substance is an iodine compound of thymol. While a few of these new names may at first lead to some confusion, it is certain that they will ultimately greatly simplify not only the terminology, but also our understanding of the nature and use of such substances. For example, at present the same chemical compound is sometimes put on the market under a variety of commercial names. Thus, hexamethylene tetramine is sold under at least seven different names, most of which refer in a vague way to some supposed therapeutic value of the drug, and not to its chemical nature. The Pharmacopœia admits this substance under the name *Hexamethylenamina* and fixes a standard of purity. By demanding the U. S. Pharmacopœia article the physician is not only assured a product of uniform high quality, but he aids in reducing the multiplicity of names which is so often a source of confusion. Because of the different names under which a given drug is sold, it is no wonder that physicians who have failed to secure the results expected from a certain drug have prescribed it again under a different name, but with the impression that they were trying something new.

The use of the chemical names, as far as practicable, is also a great aid in classifying the compounds which are being put upon the market in such ever increasing numbers. If the physician understands the chemical nature of a comparatively few well-known substances he will more readily see the relations of the new ones to these, and will appreciate how slight many of the modifications are. In fact, notwithstanding the number of the latter, drugs of distinctly new therapeutic properties are rare.

Aside from the evident desirability of having names at least suggesting the chemical nature of the drug, there is another reason for giving preference to the Pharmacopœial names. A substance is often sold under a fanciful, registered name at a much higher price than under the chemical name. Thus a hardship is worked on pharmacist and patient alike.[a]

The general principle of using, whenever practicable, the true chemical name of a substance has been extended to a number of drugs which were already official in the U. S. Pharmacopœia. Thus, Acidum Carbolicum (U. S. P., 1890) (a name no longer approved in chemical terminology), becomes *Phenol;* the composition of Salol (U. S. P., 1890) is shown by its new official name, *Phenylis Salicylas*, etc.

The "Extracta Fluida" becomes *Fluidextracta;* thus these preparations are separated alphabetically from the other extracts, and much confusion is thereby obviated.

2. *Changes in strength.*—A number of very important changes have been made in the strength of certain preparations. "The International Conference for the Unification of the Formulas of Heroic Medicines," held at Brussels in 1902, recommended that certain preparations of the heroic remedies be made of uniform strength in the pharmacopœias of the different countries. The present revision of the U. S. Pharmacopœia has accepted nearly all of the recommendations adopted by this conference. The tincture of aconite, for example, is reduced from 35 per cent to 10 per cent, the tincture of cantharides is increased from 5 per cent to 10 per cent, etc. The great majority of tinctures are now of either 10 or 20 per cent strength; the most noteworthy of those of the 10 per cent class, besides aconite and cantharides, just mentioned, are those of digitalis, squill, and strophanthus. These changes have been classified and tabulated for this bulletin.

The increase in the scope of pharmacopœias is an interesting chapter in the history of medicine. Before the publication of the first U. S. Pharmacopœia (in 1820) various European pharmacopœias were the chief standards for this country, although the United States Army, the Massachusetts Medical Society, and the New York Hospital had previously issued pharmacopœias of more than local importance. It was not until 1864 that there was a national British Pharmacopœia; prior to that year three pharmacopœias were in use in Great Britain—the London, the Edinburgh, and the Dublin. The U. S. Pharmacopœia, in adopting the suggestions of the Brussels Conference, is the first pharmacopœia to acquire an international scope.[b]

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[a] To obviate this unnecessary increase of expense to the patient a Government order was recently issued in Germany directing the official physicians to the poor to prescribe drugs under their Pharmacopœial instead of under their registered names.

[b] The growing tendency to give wider recognition to official standards is well shown by the fact that, in several States, drugs not in the U. S. Pharmacopœia are deemed adulterated if they do not conform to the standards of purity of foreign pharmacopœias.

3. Additions.—There are 117 additions in the Eighth Decennial Revision of the U. S. Pharmacopœia; among these are representatives of all classes of drugs. There is, for instance, a larger number of synthetic remedies than ever before. The principles involved in the pharmacopœial terminology of these have already been discussed. The active principles of a number of drugs have been admitted; this permits of more accurate dosage and their use obviates the necessity of administering inert and often undesirable constituents of the crude drug. New salts of well-known drugs have been admitted on account of their greater stability or solubility. Inasmuch as the discovery of diphtheria antitoxin is perhaps the greatest achievement in therapeutics in the last quarter of a century, the *Serum Antidiphthericum* is a very notable addition to the Pharmacopœia; not only is this substance made official but a definite American standard for it has been fixed.

A class of additions deserving careful consideration by the medical profession is represented by certain of those combinations of well-known drugs which in recent years have become popular with physicians and also with the laity. Some of these preparations are extensively sold under various trade names, and the manufacturers have not always made public their constituents; the same name is sometimes applied by different manufacturers to different combinations. Recognizing the demand for such preparations a number of them have been admitted into the Pharmacopœia, and the proportions of the ingredients fixed, thereby giving physicians the opportunity of securing uniform preparations, the constituents of which are of known strength and purity.

The introduction of these various preparations reduces to a very small number those extra-pharmacopœial drugs which the conservative, well-informed physician will desire to prescribe. There are undoubtedly a few drugs not in the Pharmacopœia which many physicians have found to be of distinct value; most of these are protected by patents and could not be admitted under the rules formulated by the Pharmacopœial Convention. The pharmacopœial preparations, however, will in most cases meet the needs of physicians who are accustomed to consider carefully the chemical nature and the physiological action of a drug before they venture to use it, and who know how rarely a distinctly new drug with real advantages over those already in use is discovered.

4. Assay processes.—A noteworthy feature of the revised Pharmacopœia, and one which places it at the head of the pharmacopœias of the world in this respect, is the introduction of a large number of assay processes for important drugs of vegetable origin. An examination of the tables given in this bulletin (pp. 65–66) will show that standards of strength and methods for confirming them have been introduced for over fifty important official preparations for which no such requirements were made in the 1890 Pharmacopœia.

Before the introduction of assay methods the pharmacist and physician were compelled to judge the quality of drugs largely by their appearance; from this it was possible to determine in many cases whether medicinal plants, for example, had been collected and cared for in a way which would *probably* preserve their therapeutic virtues. In many cases, however, the physician was compelled to rely solely upon the therapeutic test. Great credit is due those manufacturers who for years have been perfecting processes of assay and placing upon the market preparations of definite strength of many of the most important drugs.

The introduction into the Pharmacopœia of such a large number of these assay processes will now insure a more general uniformity in the purity, strength, and therapeutic action of pharmacopœial preparations than ever before, and the entire medical profession is under lasting obligations to the Committee of Revision who have labored so long to perfect as nearly as possible these assay methods. Unfortunately there still remain a number of pharmacopœial preparations for which no definite method of chemical analysis or assay has been devised. Among these may be mentioned the *Serum Antidiphthericum*, already referred to. Another group embraces certain galenicals, the active principles of which are as yet either not sufficiently known or are incapable of isolation and assay by present methods. Although care in the selection and in the manufacture of the materials will in many cases insure preparations of therapeutic value, yet, for the careful standardization of such, recourse is had to physiological methods; but physiological methods of standardization were specifically barred from the Pharmacopœia by the Pharmacopœial Convention of 1900. The reasons for this are obvious; assay processes introduced into the Pharmacopœia are such as every well-equipped pharmacist is able to apply. It is not to be expected, however, that even the best-equipped pharmacist should have the theoretical knowledge, the technical training, and the material facilities for biological and physiological investigations. Recognizing the increasing demand for standardized preparations, certain manufacturing establishments have been equipped not only with pharmaceutical and chemical laboratories of the most approved type, but with biological laboratories as well, the work and products of which are a credit alike to commercial enterprise and to genuine scientific progress.

5. *Purity rubric.*—Whenever practicable a minimum degree of purity has been fixed and requirements established which exclude objectionable impurities.

6. *Doses.*—The Pharmacopœial Convention instructed the Committee of Revision "to state the average approximate (but neither a

minimum nor a maximum) dose for adults," and further directed it to declare "that neither this Convention, nor the Committee of Revision created by it, intends to have these doses regarded as obligatory on the physician or as forbidding him to exceed them whenever in his judgment this seems advisable." A table of these doses has been compiled and inserted in this bulletin.

RELATION OF PHYSICIANS TO THE PHARMACOPŒIA.

A few words may be added regarding the relation of the physician to the Pharmacopœia. The U. S. Pharmacopœia had its origin in the medical profession, and the early editions were entirely the work of physicians. Although so vitally interested in the Pharmacopœia—for in many cases it is the physician's sole legal guarantee of the quality of the drugs he uses and although medical men are always represented on the Committee of Revision, the medical profession as a whole can scarcely be said to give the publication the support it deserves; physicians often prescribe proprietary drugs or articles under commercial names when a greater familiarity with the Pharmacopœia would show that there are official preparations of similar character but of more uniform composition. The authority of the Pharmacopœia, however, is steadily increasing; nearly half the States have made it the legal standard for drugs, and whenever a "pure drug bill" is proposed it is assumed, almost as a matter of course, that the U. S. Pharmacopœia is to be the standard by which the quality of drugs is to be judged. Despite the fact that there may, and of necessity always will, be certain minor imperfections in the Pharmacopœia, it is and will remain the leading standard; and no one questions the imperative need of such a standard.

The need of such a standard for drugs intended for the use of physicians is all the more evident when it is remembered that some manufacturers who do make standard pharmacopœial preparations nevertheless frankly admit that they put upon the market other preparations of the same substance by no means of pharmacopœial standard but under names almost identical with the pharmacopœial names. These manufacturers claim that, when the official article is not specifically designated, popular demand and commercial competition justify this procedure. The possible dangers in such a course must at once be apparent, and this practice is one of the reasons for the legal requirement in many States that any article sold under a pharmacopœial name must conform to pharmacopœial standards.

The Pharmacopœia is moreover the chief bulwark of one of the most time honored principles of the medical profession, namely, that there must be no secrets about the drugs used in the treatment of disease. Upon this question, that physicians must have full knowledge of all the constituents and of all the properties of the drugs they prescribe, there can be no compromise. The physician should never forget that he is the sole judge of what is suitable for his patient.[a]

Not only does the individual patient often suffer, but real progress in therapeutics is delayed by the use of remedies as to the composition of which the physician has but imperfectly informed himself; in many cases were the real nature of the drug made known the physician would see the folly of using it. The mythical character of the virtues claimed for some "special combinations" has been repeatedly shown by chemical analysis.[b] Thus some of the remedies advertised to physicians under fanciful names, with very vague descriptions of their composition but with full directions for use, have been shown to be nothing but mixtures of some of the best-known U. S. Pharmacopœia drugs.

The Pharmacopœia is often criticised for retaining and admitting drugs which many physicians regard as useless. It should be remembered, however, that the Pharmacopœia is (and under our form of government must be) representative, as well as conservative; the framers endeavor to make it reflect the actual demands of the medical profession.[c]

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[a] That the assurances as to the virtues of secret or semi-secret preparations, although made in good faith and supported by high authority, are not a sufficient safeguard against dangerous accidents, is illustrated by the following case: Some manufacturers who prepared certain tinctures with methyl alcohol attempted to justify their departure from recognized pharmaceutical methods by claiming that methyl alcohol is a better solvent of some of the constituents of ginger than is ethyl alcohol, and this claim, as well as the contention that methyl alcohol is not more toxic than ethyl alcohol, was supported in court by the testimony of high official chemists; the plaintiff in the case in question (a physician whose sight was destroyed by the methyl alcohol) thought when he bought this preparation that he was buying an article made according to the Pharmacopœia.

[b] See, for example, the reports of the Council on Pharmacy and Chemistry of the American Medical Association.

[c] The scope of the Pharmacopœia is well described in the following words of H. C. Wood, President of the U. S. Pharmacopœial Convention (Pop. Sci. Monthly, Jan., 1905, p. 279):

"A common, fallacious belief is that Pharmacopœial recognition means that the drug recognized is of value; the fact is that the United States and other Pharmacopœias have in them numerous drugs of very little use. The nature or *motif*, so to speak, of a Pharmacopœia is not to distinguish between worthy and worthless drugs, but to see that a drug which is asked for is, as sold by the apothecary, pure, and that proper preparations of uniform strength are made by the apothecary.

"The question which the framers of a Pharmacopœia ask themselves is not, Is this drug of value, but Is there a demand for it by the profession of medicine? If five thousand doctors in the United States believed brick dust to be a valuable remedy and habitually used it, brick dust would have to go into the Pharmacopœia. Witch-hazel is probably as active and as useful as is brick dust, but witch-hazel is a fad and is enormously called for, and so witch-hazel must go into the Pharmacopœia. The Pharmacopœia exists for the purpose of requiring the apothecary to give, in the first place, pure brick dust or pure witch-hazel when asked for; and, in the second place, uniform preparations of these remedies."

If obsolete drugs are retained or new ones of proved value fail to gain admission to the Pharmacopœia it is because the medical profession of the country fails, through lack of concerted action (as by means of the national or local medical societies) to make their wishes sufficiently clear.[a]

No account of the Eighth Decennial Revision of the Pharmacopœia would be complete without an expression of the gratitude which all physicians must feel to the Committee of Revision who, with no motives other than their interest in higher standards, have labored so long and well to perfect as nearly as may be the U. S. Pharmacopœia.

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[a] When the Pharmacopœial Convention of 1900 met, only five medical organizations presented recommendations and suggestions for the revision of the Pharmacopœia.

ADDITIONS TO THE PHARMACOPŒIA.

ACETONUM.

Acetone.

$CH_3.CO.CH_3$

"A liquid containing not less than 99 per cent by weight of absolute acetone." (U. S. P.)

Chemically, acetone is dimethyl-ketone (CH_3COCH_3). It is present to a considerable extent in crude wood alcohol.

Properties.—Clear, colorless, mobile, neutral liquid, inflammable, and having an ethereal odor and taste. Specific gravity, 0.790 (25° C.); boiling point, 56.5° C. Miscible with water and alcohol in all proportions. An excellent solvent for fats, resins, rubber, etc. Iodoform is formed when acetone is slightly warmed with an alkali and iodine (basis of method for determining acetone in diabetic urine, etc.); it also yields iodoform with an alcoholic solution of iodine and ammonia (Gunning's test; difference from alcohol). Acetone forms with nitroprussiate of soda and sodium hydroxide a reddish-brown color, which passes into purple or violet on acidifying with acetic acid (Legal's test).

Use.—Acetone is used extensively in the manufacture of chloroform, iodoform, and sulphonmethane (q. v.). A number of oleoresins (aspidium, capsicum, ginger, lupulin, and pepper) formerly prepared (U. S. P., 1890) with ether are now prepared with acetone, as the latter is neither so inflammable nor so expensive as the former.

Acetone seems to be slightly more poisonous than ethyl alcohol; the symptoms caused by the two are, generally speaking, similar.

Caution.—It should be kept in well-stoppered bottles remote from lights or fire.

Related Compounds.—When a phenyl radical (C_6H_5) takes the place of one of the methyl groups in acetone, the resulting compound is phenyl-methyl-ketone ($C_6H_5COCH_3$), also known as acetophenone. This has been used as a hypnotic under the name of *Hypnone*. It is a liquid above 20.5° C. *Malarine* is a condensation product of acetophenone and paraphenetidin (see Acetphenetidin). It is usually employed in the form of the citrate.

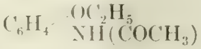
Salacetolum is a salicylic acid ester of acetol which is an alcohol (CH_3COCH_2OH) derived from acetone; proposed as an antirheumatic.

Acetoacetic acid, also called diacetic acid (CH_3COCH_2COOH), which may be looked upon as acetone in which a hydrogen atom has been replaced by the acid group ($COOH$), is found in the urine in many cases of diabetes mellitus. It is thought that one source of acetone found in diabetic urine is the decomposition of diacetic acid.

ACETPHENETIDINUM.

Acetphenetidin.

(*Phenacetin.*)



$$C_6H_4 < \begin{matrix} OC_2H_5 \\ NH(COCH_3) \end{matrix}$$

This substance is generally known by the trade name *phenacetin;* official in the British, German, and Swiss Pharmacopœias as Phenacetinum; also called para-acetphenetidin.

Chemistry.—The derivation of acetphenetidin is shown by the following formulas:

$$C_6H_4 < \begin{matrix} OH \\ H \end{matrix} \rightarrow C_6H_4 < \begin{matrix} OH\ (1) \\ NH_2(4) \end{matrix} \rightarrow C_6H_4 < \begin{matrix} OC_2H_5 \\ NH_2 \end{matrix} \rightarrow C_6H_4 < \begin{matrix} OC_2H_5 \\ NH\ (COCH_3) \end{matrix}$$

Phenol — Para-amidophenol — Para-phenetidin (Para-amido-phenetol) — Acet-paraphenetidin (*phenacetin*)

It may be regarded as acetanilide ($C_6H_4 < \begin{matrix} H \\ NH\ (COCH_3) \end{matrix}$) in which one hydrogen atom is replaced by the ethoxy group (OC_2H_5).

Character.—"White, glistening, crystalline scales, or fine crystalline powder, odorless, and tasteless."

Solubility.—Slightly soluble in water (1:925), much more so in boiling water (1:70), and still more in alcohol (1:12).

Purity.—Occasionally adulterated with acetanilide, which may be recognized by the following Pharmacopœial test:

"If 0.1 Gm. of Acetphenetidin be boiled with 10 Cc. of water it should yield a solution which, when cooled and filtered, should not become turbid upon the addition of bromine T. S. [1 per cent solution] in slight excess (absence of acetanilide)."

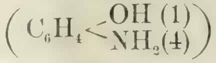
For other tests, see the Pharmacopœia and Kebler, Lyman F.: Adulterated drugs and chemicals, U. S. Dept. Agric., Bur. Chemistry. Bull. No. 80, 1904.

Incompatibility.—Incompatible with phenol, chloral hydrate, iodine, salicylic acid, and oxidizing agents.

Dose.—"Average dose: 0.500 Gm. =500 milligrammes (7½ grains)." (U. S. P.)

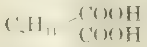
Caution.—The German Pharmacopœia states that not more than 3 Gm. (45 grains) should be given in the course of a day. Special caution should be observed when acetphenetidin is prescribed in combination with other drugs of similar physiological action; thus, acetanilide and acetphenetidin should not be combined in full dose of each.

Excreted in the urine as amidophenol or amidophenetol, which gives a red color with ferric chloride; also causes appearance of a reducing substance.

Similar Compounds.—This is the representative of a very large number of similar compounds known as the phenetidin series. These are derived from para-amidophenol  $\left(C_6H_4 < \begin{matrix} OH\ (1) \\ NH_2(4) \end{matrix} \right)$ by replacing the hydrogen atom of the hydroxyl group and one or both of the hydrogen atoms of the amido (NH_2) group by alkyl or acid radicals. Thus, *lactophenin* is formed when the lactyl group ($COCH(OH)CH_3$) is introduced into para-phenetidin instead of the acetyl (CH_3CO) group: $C_6H_4 < \begin{matrix} OC_2H_5 \\ NHCOCH(OH)CH_3 \end{matrix}$. *Sedatin,*[a] *apolysin, citrophen, kryofin, malakin, salophen, saliphen, phenocoll, salocoll*, etc., are similar compounds. The physiological action of all these substances is fundamentally the same. These compounds, as well as acetphenetidin itself, are contained in many migraine and headache powders. *Chinophenin* and *eupyrine* are also phenetidin compounds.

ACIDUM CAMPHORICUM.

Camphoric Acid.



$$C_8H_{14} < \begin{matrix} COOH \\ COOH \end{matrix}$$

"A dibasic organic acid obtained by the oxidation of camphor." Official under same name in the German Pharmacopœia.

Of the various camphoric acids known, only the dextro-rotatory is official. It is prepared by oxidizing camphor with nitric acid.

Character.—Colorless, odorless crystalline plates, or a crystalline powder having an acid, bitter taste. Melting point, 187° C. It forms easily soluble salts with the alkalies.

Solubility.—Difficultly soluble in cold water (1:125), more readily in boiling water (1:10); readily soluble in alcohol; soluble in fatty oils (1:50).

Purity.—Should not have the odor of camphor; tested by the U. S. Pharmacopœia method should be free from nitric acid.

Action.—The general symptoms produced by camphoric acid are similar to those caused by camphor, but the latter is much more powerful. Used as an antihydrotic in doses of 1 to 2 Gm. and (in solution) as a local astringent in the nose, throat, and bladder. As it is but slightly soluble in water, it has been recommended in making solutions to add 11 per cent of alcohol for each per cent of camphoric acid.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

Guakamphol is a combination of Guaiacol and Camphoric Acid.

---

[a] The name *sedatin* has also been used as a synonym for antipyrine.

ACIDUM HYDRIODICUM DILUTUM.

Diluted Hydriodic Acid.

HI

"A solution of hydriodic acid containing not less than 10 per cent by weight of the absolute acid, and about 90 per cent of water."

This is a reintroduction, the preparation having been admitted to the U. S. Pharmacopœia of 1860, but dismissed on account of the difficulty of preserving it.

In the present preparation there is a small quantity of hypophosphorous acid. This acts as a preservative by reducing any iodine set free to hydriodic acid. The method of preparing it (for which see the Pharmacopœia) is that recommended in the 1890 U. S. Pharmacopœia in connection with the preparation of Syrupus Acidi Hydriodici; the latter is now prepared from the Acidum Hydriodicum Dilutum. The method is simple and requires no special apparatus or chemicals.

Character.—A clear, colorless liquid, odorless and having an acid taste. It should not become colored on keeping. Miscible in all proportions with water or alcohol.

Dose.—"Average dose: 0.5 Cc. (8 minims)." (U. S. P.)

Caution.—"Should be kept in small, amber-colored, glass-stoppered bottles, protected from the light."

ACIDUM HYPOPHOSPHOROSUM.

Hypophosphorous Acid.

HPH_2O_2

"A liquid composed of 30 per cent by weight of absolute hypophosphorous acid and 70 per cent of water."

Properties. A colorless, odorless liquid having an acid taste. Miscible in all proportions with water. It is a powerful reducing agent, precipitating metallic silver from solutions of silver nitrate, calomel from corrosive sublimate, etc.: when heated with copper sulphate a yellow precipitate of copper hydride is formed (difference from phosphorous acid).

It is used in the preparation of Acidum Hypophosphorosum Dilutum.

Incompatibilities. Incompatible with arsenical salts, and in general with substances that are more or less easily reduced.

ACIDUM TRICHLORACETICUM.

Trichloracetic Acid.

$CCl_3.COOH$

"A monobasic organic acid usually obtained by the oxidation of hydrated chloral with nitric acid."

Properties.—White, deliquescent, rhombohedral crystals, having a slight, characteristic, mildly pungent odor.

Very soluble in water and alcohol; in the latter, part of the acid is changed into the ester.

The aqueous solution on boiling is decomposed with the formation of chloroform and carbon dioxide: $CCl_3COOH = CHCl_3 + CO_2$.

Ten parts of trichloracetic acid and 1 part of water form a liquid known as acidum trichloraceticum liquefactum; it is often dispensed in this form (cf. Phenol Liquefactum).

It precipitates proteids and is used as a reagent for the detection of albumin in urine and milk.

Caution.—"Should be kept in dark, amber-colored, well-stoppered bottles in a cool place." It is far stronger than acetic acid and should be used with great caution.

ACONITINA.

Aconitine.

$C_{34}H_{47}NO_{11}$

An alkaloid obtained from Aconite. Official in the Br. P.

The chemical structure of aconitine is analogous to that of atropine and cocaine; like the latter it undergoes partial decomposition when boiled for some time with water.

Properties.—Colorless or white rhombic tables or prisms, odorless, permanent in the air, and producing in extremely diluted solutions a characteristic tingling sensation when brought in contact with the mucous membrane of the tongue or lips. The alkaloid itself should never be tasted, and its solution only when largely diluted, and then with the utmost caution.

Very slightly soluble in water (1:3200), much more so in alcohol (1:22).

Aconitine was formerly in the U. S. Pharmacopœia, but was dropped in 1880 owing to the variable composition of the article then on the market. At present there are on the market, in addition to the crystalline aconitine, an amorphous aconitine and an eclectic "aconitin." The greatest caution should be observed not to confuse these preparations, as they differ considerably in composition.

Aconitine is the most powerful drug in the Pharmacopœia; death is reported to have resulted from 0.5 milligramme ($\frac{1}{128}$ grain).

Dose.—"Average dose: 0.00015 Gm. = 0.15 milligramme ($\frac{1}{400}$ grain)." (U. S. P.)

Aconitine is contained in the Oleatum Aconitinæ of the National Formulary.

ADEPS LANÆ.

Wool-Fat.

Adeps Lanæ, Br. P.; Adeps Lanæ anhydricus, P. G. "The purified fat of the wool of sheep, freed from water." The Hydrous Wool-Fat, which contains "not more than 30 per cent of water," is still retained in the Pharmacopœia; if this be heated on the water bath, with stirring, until it ceases to lose weight, it is converted into Adeps Lanæ.

In making certain ointments, the water contained in hydrous wool-fat is objectionable; for such preparations Adeps Lanæ is preferable.

ÆTHYLIS CARBAMAS.

Ethyl Carbamate.

(*Urethane.*)

$$CO\begin{matrix}NH_2\\OC_2H_5\end{matrix}$$

Ethyl Carbamate is defined as: "An ester of carbamic acid obtained by the reaction of ethyl alcohol upon urea (carbamide) or one of its salts." Reaction: $CO<^{NH_2}_{NH_2} + HOC_2H_5 = CO<^{NH_2}_{OC_2H_5} + NH_3$

Character.—"Colorless, columnar crystals or scales, odorless, and having a cooling saline taste."

Solubility.—Soluble in less than one part of water, and in 0.6 part of alcohol.

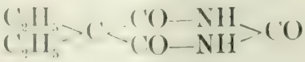
Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

Larger doses do not as a rule increase the hypnotic effect, as the (NH_2) group stimulates the central nervous system in somewhat the way that ammonia (NH_3) does. Both Ethyl Carbamate (*urethane*) and *hedonal* (see below) frequently fail to produce sleep, probably owing to the stimulating action of the (NH_2) group.

Caution.—Should be kept in well-stoppered bottles.

This substance, generally known simply as *urethane*, is a member of a series of compounds called urethanes. They are esters of carbamic acid $CO<^{NH_2}_{OH}$ which in turn is derived from carbonic acid $CO<^{OH}_{OH}$ by the substitution of the amido group (NH_2) for one hydroxyl group (OH). Carbamic acid is not known in the free state, but only in the form of its salts. The ammonium salt is a constituent of the Pharmacopœial Ammonium Carbonate.

Related Products.—Closely allied to ethyl carbamate are: *hedonal* $\left(\text{methylpropylcarbinolurethane} = CO<^{NH_2}_{O-CH<^{CH_3}_{C_3H_7}}\right)$, *euphorine* or *phenylurethane* $\left(CO(NHC_6H_5)OC_2H_5\right)$, *neurodin*, *thermodin* (*phenacetin-urethane*), etc. One of the latest additions to this group is the *veronal* of Emil Fischer and von Mering; this is diethylmalonylurea:



$$\begin{matrix}C_2H_5\\C_2H_5\end{matrix}>C<\begin{matrix}CO-NH\\CO-NH\end{matrix}>CO$$

ÆTHYLIS CHLORIDUM.

Ethyl Chloride.

C_2H_5Cl

Ethyl Chloride is "a haloid derivative, prepared by the action of hydrochloric acid gas upon absolute ethyl alcohol." Also known as *chelene* or *kelene*.

Character.—"Colorless, mobile, very volatile liquid, having a characteristic, rather agreeable odor and a burning taste." It boils at a temperature of 12.5° to 13° C.

Solubility.—Slightly soluble in water, readily in alcohol.

Purity.—"If 10 Cc. of ethyl chloride, while cold, be dissolved in alcohol, and a few drops of silver nitrate T. S. $\left[\frac{N}{10} AgNO_3\right]$ be added, no turbidity should be produced (absence of hydrochloric acid)."

Although ethyl chloride is usually used as a local anæsthetic, it is contained in the following mixtures intended for general anæsthesia:

Anæsthol	Ethyl chloride	17 parts	by weight.
	Chloroform	36 parts	
	Ether	48 parts	
Somnoform	Ethyl chloride	60 parts	by weight.
	Methyl chloride	35 parts	
	Ethyl bromide	5 parts	

(Jour. Amer. Med. Assoc., April 22, 1905, p. 1303.)

"*Anæsthol* (Speier)" is a mixture of ethyl chloride and methyl chloride for local anæsthesia. *Anestyl* and *coryl* are also mixtures of ethyl chloride and methyl chloride.

Caution.—Very inflammable; should not be used in proximity to a gas flame or fire. It should be preserved in hermetically sealed glass tubes in a cool place.

As a permanent opacity may result when freezing mixtures come in contact with the cornea, Merz-Weigandt (Hirschberg's Festschrift, 1905, p. 187) emphasizes the necessity of caution when using ethyl chloride about the head.

AMMONII SALICYLAS.

Ammonium Salicylate.

$C_6H_4(OH)COONH_4$

Character.—"Colorless, lustrous, monoclinic prisms or plates, or a white crystalline powder, odorless, and having at first a slightly saline, bitter taste, with a sweetish aftertaste. Permanent in dry air." The concentrated aqueous solution reddens blue litmus.

Solubility.—Very soluble in water (0.9 part), slightly less so in alcohol (2.3 parts).

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

"Should be kept in well stoppered bottles, protected from heat and light."

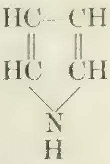
ANTIPYRINA.

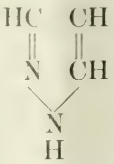
Antipyrine.

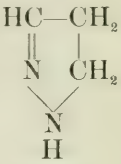
$C_3HN_2O(CH_3)_2.C_6H_5$

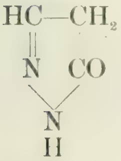
Official in the Austrian and Swiss Pharmacopœias as Antipyrinum; now official in the German Pharmacopœia as Pyrazolonum phenyldimethylicum (formerly as Antipyrinum); in the British as Phenazonum, and in the French as Analgésine. Other names that have been applied to it are *anodynin*, *metozin*, *oxydimethylchinizin*, *parodyn*, *phenazon*, *phenylon*, *pyrazolin*, *sedatin*.

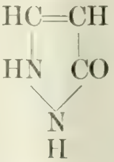
Chemistry.—Chemically it is phenyldimethylisopyrazolon; its derivation may be seen from the following formulas:

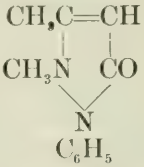

Pyrrol


Pyrazol


Pyrazolin


Pyrazolon


Iso-pyrazolon


Dimethyl-phenyl-iso-pyrazolon

It is not obtained directly from the mother substance isopyrazolon, but is built up synthetically by condensation of phenylhydrazine with acetoacetic ether, and methylation of the product.

Character. "A colorless, almost odorless, crystalline powder, or tabular crystals, with a slightly bitter taste."

Solubility. Soluble in less than 1 part of water, and in 1 part of alcohol.

Purity. "Two Cc. of an aqueous solution of Antipyrine (1 in 100) mixed with an equal volume of nitric acid assumes a yellowish color, passing to crimson on warming (distinction from acetanilide and acetphenetidin)."

"On warming 0.1 Gm. of Antipyrine with sodium hydroxide T. S. [Liq. Sodii Hydroxidi] and again warming after the addition of chloroform, the disagreeable odor of phenyl-isocyanide should not be developed (absence of acetanilide)."

Incompatibilities.—Hager's Handbuch der pharmaceutischen Praxis calls attention to the incompatibility of Antipyrine with a large number of substances and the production therewith of unexpected changes; among these may be mentioned:

(1) Antipyrine and nitrous acid, or substances which can evolve nitrous acid, as, for instance, Amylis Nitris and Spiritus Ætheris Nitrosi; a green color results from the formation iso-nitroso-antipyrine.

(2) Antipyrine and Mercurous Chloride (calomel); a very poisonous organic mercury compound is formed in a mixture of these substances.

(3) Antipyrine and Phenol, even in dilute aqueous solution, form an oily mass.

(4) Antipyrine and Sodii Salicylas, when rubbed together in powder, form a pasty mass; in solution they do not seem to affect each other.

(5) Antipyrine and Betanaphthol give a moist mixture.

(6) Antipyrine and Hydrated Chloral, rubbed together, form an oil which no longer gives the reactions of the components.

(7) Tannic acid precipitates Antipyrine as a tannate.

On the other hand, Antipyrine increases the solubility in water of caffeine and the quinine salts.

Allied Compounds.—Antipyrine unites with resorcin to form *resopyrin*, with salicylic acid to form *salipyrin*, with chloral hydrate to form *hypnal* and other compounds. *Pyramidon* is a dimethylamido substitution product of antipyrine. *Ferripyrin* is a combination of ferric chloride and antipyrine. Many other compounds are known. Antipyrine is a constituent of many "migraine powders."

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

Caution.—On account of the wide range of incompatibilities already indicated, the greatest caution should be observed in combining antipyrine with other substances.

AQUÆ.

Waters.

Medicated Waters.

"The Medicated Waters, when prepared from volatile oils, are intended to be, as nearly as practicable, saturated solutions, which must be clear, and free from solid impurities."

This is a new title under which various methods of preparing official waters of volatile oils are briefly outlined. In the method especially recommended by the Pharmacopœia, in a number of cases, the solution of the volatile oils is facilitated by the use of purified talc, instead of by precipitated calcium phosphate, as in U. S. Pharmacopœia, 1890.

AQUA HAMAMELIDIS.

Hamamelis Water.

The final product here is a distillate, while the old Extractum Hamamelidis Fluidum is a percolate now designated Fluidextractum Hamamelidis Foliorum.

The aqua contains about 15 per cent of alcohol.

Dose.—"Average dose: 8 Cc. (2 fluidrachms)." (U. S. P.)

This preparation is almost identical with Aqua Hamamelidis Spirituosa, N. F.

BENZALDEHYDUM.

Benzaldehyde.

C_6H_5CHO

"Produced artificially or obtained from natural oil of bitter almond or other oils, and containing not less than 85 per cent of pure benzaldehyde."

Properties.—"Colorless, strongly refractive liquid, having a bitter-almond-like odor and a burning, aromatic taste." "Sparingly soluble in water (1:300); soluble in all proportions, in alcohol, ether, and fixed and volatile oils."

Synthetic benzaldehyde is usually prepared from benzylchloride or benzylidenechloride; unless carefully purified, such benzaldehyde will contain chlorinated products (hence the U. S. P. test for these; cf. also Oleum Amygdalæ Amaræ).

Unless properly prepared the benzaldehyde obtained from the natural oil of bitter almond may contain prussic acid (hence the U. S. P. test for this substance).

Benzaldehyde is the principal constituent of natural oil of bitter almond. The U. S. Pharmacopœia, Eighth Decennial Revision, demands that the official oil of bitter almond contain not less than 85 per cent of benzaldehyde. The natural oil of bitter almond also contains hydrocyanic acid; the Eighth Decennial Revision demands that the official oil contain not less than 2 per cent nor more than 4 per cent of hydrocyanic acid. The commercial natural oils of bitter almond contain from 1.5 to 11 per cent, or more, of hydrocyanic acid; hence (unless the hydrocyanic acid has been removed) they should be used with great caution as flavoring agents.

Dose.—"Average dose: 0.03 Cc. (½ minim)." (U. S. P.)

Caution. It should be kept in small, amber-colored, well-stoppered bottles, as it is readily oxidized to benzoic acid; the latter change occurs more rapidly with the pure benzaldehyde than with the natural oil of bitter almond.

Nitrobenzene is an oil having an odor very much like that of oil of bitter almond; it is known as "artificial oil of bitter almond," or "essence of mirbane." It is sometimes used as a substitute for the oil of bitter almond in the manufacture of soap, cheap confectionery, etc. It is very poisonous.

BENZINUM PURIFICATUM.

Purified Petroleum Benzin.

For certain purposes—as, for instance, the preparation of deodorized tincture of opium—the ordinary U. S. P. Benzinum (Petroleum Benzin or "petroleum ether") is not sufficiently pure, hence the introduction of the purified product. The process of purification provided by the Pharmacopœia is designed to remove some of the heavier hydrocarbons and foreign, malodorous substances.

Petroleum ether is occasionally used in the preparation of mixtures for the production of general anæsthesia. Schleich has recommended three different mixtures for use in operations of short, moderate, and considerable duration, respectively:

	I.	II.	III.
Chloroform	45.0	45.0	30.0
Ether	180.0	150.0	80.0
Petroleum ether (boiling point 60–65° C.)	15.0	15.0	15.0
Boiling point of the mixture	38° C.	40° C.	42° C.

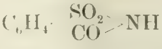
As Schleich's theory turns entirely on the boiling point of the resulting mixture, it may be well to remember that the boiling point of Benzinum (U. S. P.) is given at 45°–60° C. Schleich's mixtures are said, however, to have no constant boiling point.

(For other general anæsthetic mixtures, based upon Schleich's researches, see under Æthylis Chloridum.)

BENZOSULPHINIDUM.

Benzosulphinide.

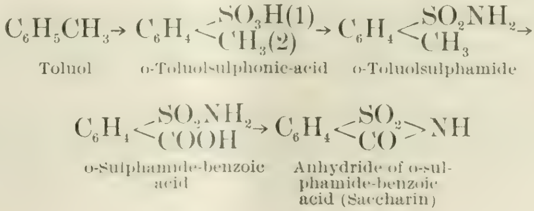
Saccharin.



$$C_6H_4<\begin{matrix}SO_2\\CO\end{matrix}>NH$$

Official as Saccharinum in the Austrian and Swiss Pharmacopœias, as Glusidum (Gluside) in the British Pharmacopœia, and as Acide anhydroorthosulfamide-benzoique in the French. It is variously known as *glucusimide*, *saccharol*, *saccharinol*, *saccharinose*, *agucarine*, etc.

Chemistry.—Chemically it is the anhydride of ortho-sulphamide-benzoic acid (benzoyl sulphonic-imide). Its derivation from toluol (from which it is usually made) is shown by the following formulas:



$$\underset{\text{Toluol}}{C_6H_5CH_3} \rightarrow \underset{\text{o-Toluolsulphonic-acid}}{C_6H_4<\begin{matrix}SO_3H(1)\\CH_3(2)\end{matrix}} \rightarrow \underset{\text{o-Toluolsulphamide}}{C_6H_4<\begin{matrix}SO_2NH_2\\CH_3\end{matrix}} \rightarrow$$

$$\underset{\text{o-Sulphamide-benzoic acid}}{C_6H_4<\begin{matrix}SO_2NH_2\\COOH\end{matrix}} \rightarrow \underset{\text{Anhydride of o-sulphamide-benzoic acid (Saccharin)}}{C_6H_4<\begin{matrix}SO_2\\CO\end{matrix}>NH}$$

Saccharin was discovered in 1879 by Ira Remsen and C. Fahlberg.

Character.—A white, crystalline powder, nearly odorless, having an intensely sweet taste even in dilute solutions. The sweet taste may be recognized in a dilution of 1:100,000, as compared with cane sugar 1:200.

Solubility.—Soluble in 250 parts of water and in 25 parts of alcohol; more so in boiling water (1:24). It behaves like a strong acid and dissolves readily in alkalies; the sodium salt $(C_6H_4{<}\begin{smallmatrix}CO\\SO_2\end{smallmatrix}{>}NNa)$ is known as *soluble saccharin* or *krystallose*.

The Liquor Saccharini of the National Formulary is a solution of saccharin in sodium bicarbonate and alcohol.

There are a number of preparations on the market, such as *antidiabetin*, which contain saccharin.

Dose.—"Average dose: 0.200 Gm. = 200 milligrammes (3 grains)." (U. S. P.)

Dulcin or *sucrol*, another very sweet substance, is para-phenetolcarbamid; *Saxin* is a similar product.

BERBERIS.

Berberis.

The rhizome and roots of *Berberis aquifolium* and other species of Berberis. *Berberis aquifolium* is known as Oregon Grape Root. It contains an alkaloid, berberine, which is also found in Menispermum (a drug dropped from the present Revision), Calumba, Hydrastis, and other drugs.

A Fluidextract of Berberis has also been admitted into the U. S. Pharmacopœia.

Dose.—"Average dose: 2 Gm. (30 grains)." (U. S. P.)

BISMUTHI SUBGALLAS.

Bismuth Subgallate.

Official in the German Pharmacopœia as Bismutum subgallicum; also known as *dermatol*.

Composition. Although somewhat variable in chemical composition, Bismuth Subgallate approximates the following formula: $C_6H_2(OH)_3CO_2Bi(OH)_2$, which contains 56.49 per cent of bismuth oxide (Bi_2O_3). The U. S. Pharmacopœia demands that it contain not less than 52 per cent, nor more than 57 per cent, of pure bismuth oxide.

Character. An amorphous, bright yellow powder, odorless, tasteless, and permanent in the air.

Solubility. Insoluble in water and alcohol, and in very dilute mineral acids. Readily soluble with decomposition in hydrochloric, nitric, and sulphuric acids, if these be heated. Alkalies dissolve it readily, forming clear, yellow-colored solutions, which rapidly change to deep red.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

It is used in general for the same purposes as the subnitrate.

BISMUTHI SUBSALICYLAS.

Bismuth Subsalicylate.

Official under the names of Bismutum subsalicylicum (P. G.), Bismutum salicylicum (Swiss), Bismuthi Salicylas (Br. P.). The composition varies somewhat, but is approximately $C_6H_4(OH)CO_2BiO$. The U. S. Pharmacopœia requires that it yield not less than 62 per cent, nor more than 64 per cent, of pure bismuth oxide.

Character.—"A white, or nearly white, amorphous or crystalline powder, odorless, tasteless, and permanent in the air."

Solubility.—Almost insoluble in water; on prolonged boiling with water, a more basic salt is formed through the splitting off of free salicylic acid. Alcohol or ether extracts salicylic acid, with decomposition of the salt. Acids decompose it, with separation of a white, flocculent precipitate of salicylic acid.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

Other Unofficial Bismuth Compounds.—A large number of bismuth compounds have been proposed for medicinal use in the last few years. The following may be mentioned as examples: *Airol* (bismuth oxyiodosubgallate), *bismal* (bismuth methylene digallate), *bismutol* ("bismuth sodium phosphate salicylate"), *crurin* (quinolin bismuth sulphocyanate), *eudoxin* (bismuth tetraiodo-phenolphthalein), *iodogallicin* (bismuth oxyiodide methyl-gallol), *orphol* (bismuth betanaphthol), other phenolates, the benzoate, the chrysophanate (*dermol*), the cinnamylate (*hetoform*), the cresolate, the lactate, the bilactomonotannate (*lactanine*), the phenolsulphonate, the tannate, and similar salts; also proteid compounds, as the peptonate; compounds with resorcin, pyrogallol (*helcosol*), etc.

BROMOFORMUM.

Bromoform.

$CHBr_3$

Official in the German Pharmacopœia as Bromoformium. This is tribrommethane, being entirely analogous in composition to chloroform and iodoform.

Character.—A heavy, transparent, colorless, mobile liquid having an ethereal odor and a penetrating, sweetish taste resembling chloroform.

Solubility.—Only slightly soluble in water, but readily in alcohol and ether. Specific gravity at 25° C., 2.808. It is only slightly volatile at ordinary temperature, boils at 148° C., and solidifies at 6° C.

Absolute bromoform is decomposed in presence of light and air more rapidly than chloroform. The addition of 4 per cent of alcohol, as in the case of chloroform, will preserve bromoform for months. When decomposed, bromine is set free, which colors the liquid yellowish red.

Dose.—"Average dose: 0.2 Cc. (3 minims)." (U. S. P.)

Caution.—Keep in dark amber-colored, glass-stoppered bottles in a cool place, protected from light.

CATAPLASMA KAOLINI.

Cataplasm of Kaolin.

Introduced in response to a request for an external clay preparation; similar to a number of commercial articles. The constituents are kaolin (57.7 per cent), boric acid, methyl salicylate, glycerin, and small quantities of thymol and oil of peppermint.

CERATUM RESINÆ COMPOSITUM.

Compound Rosin Cerate.

Composed of rosin, yellow wax, suet, turpentine, and linseed oil. For formula and method of preparation see U. S. Pharmacopœia.

Minor changes in the constituents, not however affecting the strength of the active ingredients, have been made in all the cerates with the exception of Ceratum Resinæ.

Ceratum Cantharidis, for instance, should no longer have the odor of oil of turpentine.

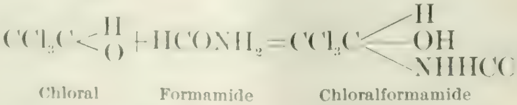
CHLORALFORMAMIDUM.

Chloralformamide.

$CCl_3.CH(OH)NH.COH$

Chloralum formamidatum (P. G.). Also known as *Chloralamide*, a name which, because it is both inaccurate and misleading (being properly applied to another substance), should not be used.

Chemistry. It is formed by the direct union of anhydrous chloral and formamide, as shown by the following reaction:



$$CCl_3C{<}\begin{matrix}H\\O\end{matrix} + HCONH_2 = CCl_3C{<}\begin{matrix}H\\OH\\NHHCO\end{matrix}$$

Properties. Colorless, lustrous crystals, odorless, and having a somewhat bitter taste.

Soluble in water (1:18.7) and alcohol (1:1.3), readily in glycerin and acetone. It is not affected by dilute acids, but is decomposed, on warming with alkali hydroxides, yielding chloroform; it behaves in this respect like chloral hydrate, and is, hence, incompatible with alkalies. Chloral is formed by its decomposition in the body; the formamide which is formed at the same time is supposed to stimulate the circulation and thus counteract the depression caused by the chloral.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

Caution.—Keep in amber-colored, well-stoppered bottles. It is easily decomposed in solution by heat; hence heat should not be used in preparing aqueous solutions. Avoid combination in full dose with other drugs of a similar physiologic action, for example, Sulphonethylmethane (*trional*), Sulphonmethane (*sulphonal*), Hydrated Chloral, etc.

Allied Compounds.—Chloral, like other aldehydes, forms many addition products more or less comparable with chloralformamide. Thus, with ethyl carbamate, chloral unites to form *uralium;* with dextrose it forms *chloralose;* with antipyrine, *hypnal;* with amylene hydrate, *dormiol*, etc.

Croton chloral (Butyl-chloral Hydras, Br. P.) is trichlorbutylaldehyde hydrate ($CH_3CHClCCl_2CH(OH)_2$). Other tri-chlor substitution products recently proposed as hypnotics are *chloretone* or *aneson* (trichlorpseudobutylalcohol or *acetone-chloroform*) and *isopral* (trichlorisopropyl alcohol).

CINNALDEHYDUM.

Cinnamic Aldehyde.

$C_6H_5CH{:}CH.COH$

Obtained from oil of cinnamon or prepared synthetically. It is the chief and essential constituent of oil of cinnamon, and should be present to the extent of about 75 per cent by volume in a good oil.

Character.—A colorless liquid, having a cinnamon-like odor and a burning, aromatic taste. It may be used for nearly all purposes in place of the official oil of cinnamon. Pure synthetic Cinnamic Aldehyde occurs in the market, and has, to a great extent, displaced the natural oil of cinnamon.

Solubility.—Sparingly soluble in water, readily in alcohol, fixed and volatile oils.

Dose.—"Average dose: 0.05 Cc. (1 minim)." (U. S. P.)

COCAINA.

Cocaine.

$C_{17}H_{21}NO_4$

Official under same name in the British Pharmacopœia. An alkaloid obtained from several varieties of Coca. Hitherto only the most frequently used salt of Cocaine—the hydrochloride—was official in the U. S. Pharmacopœia.

Properties.—Slightly soluble in water (1:600), much more so in alcohol (1:5), more readily in both when warm; insoluble in glycerin.

Cocaine is a methyl compound of benzoylecgonine. When it is boiled with water methyl alcohol is first split off, then benzoic acid; these changes occur more rapidly with dilute acids or barium hydroxide. Conversely cocaine may be built up by introducing the methyl and benzoyl groups into ecgonine (a compound having the empirical formula $C_9H_{15}NO_3$).

Cocaine is contained in the newly introduced Oleatum Cocainæ.

Dose.—"Average dose: 0.030 Gm. = 30 milligrammes (½ grain)." (U. S. P.)

Substitutes for Cocaine.—A number of synthetic compounds with names suggestive of that of cocaine have recently been introduced as local anæsthetics. Among the best known of these are *beta-eucaine* (the hydrochloride of benzoyl-vinyl-diacetonealkamin); *holocaine*, which may be regarded as a derivative of acetphenetidin (*phenacetin*); *tropacocaine* (benzoylpseudotropein); *nirvanin*, *anæsthin* (para-amido-benzoic acid ester) and *orthoform*, complex derivatives of benzoic acid. *Stovain* is a recent addition to this group.

CODEINÆ PHOSPHAS.

Codeine Phosphate.

$C_{18}H_{21}NO_3.H_3PO_4+2H_2O$

Official under same name in the British Pharmacopœia and as Codeinum phosphoricum in the German. Hitherto the free alkaloid alone was official in the U. S. Pharmacopœia.

Character.—"Fine, white, needle-shaped crystals or crystalline powder, without odor, and having a bitter taste."

Solubility.—Soluble in 2.25 parts of water, 261 parts of alcohol, more so when either is warmed. The aqueous solution has a slightly acid reaction to litmus.

Dose.—"Average dose: 0.03 Gm. = 30 milligrammes (½ grain)." (U. S. P.)

CODEINÆ SULPHAS.

Codeine Sulphate.

$(C_{18}H_{21}NO_3)_2.H_2SO_4+5H_2O$

Character.—Long, glistening, white needles, prisms or crystalline powder, efflorescent in the air, odorless and having a bitter taste.

Solubility.—Soluble in about 30 parts of water and 1,035 parts of alcohol—much more so when either is warmed.

The aqueous solution is neutral to litmus paper.

Dose.—"Average dose: 0.030 Gm.=30 milligrammes ($\frac{1}{2}$ grain)." (U. S. P.)

Similar Morphine Derivatives.—Codeine is methylmorphine ($C_{17}H_{18}(CH_3)NO_3$). *Dionine* is ethylmorphine hydrochloride ($C_{17}H_{17}NO(OH)OC_2H_5HCl + H_2O$). *Peronine* is benzylmorphine hydrochloride ($C_{17}H_{18}NO_3(C_6H_5CH_2)HCl$). *Heroine* is diacetylmorphine ($C_{17}H_{17}NO(C_2H_3O_2)_2$).

Syrupus Codeinæ, N. F. is a 1 per cent solution of Codeine Sulphate in Syrup.

COLCHICINA.

Colchicine.

$C_{22}H_{25}NO_6$

An alkaloid obtained from Colchicum. The U. S. Pharmacopœia demands that the official Colchici Cormus contain not less than 0.35 per cent and the Colchici Semen not less than 0.55 per cent of colchicine. Although classed with the alkaloids, colchicine has an acid reaction.

Character.—Pale yellow leaflets or a pale yellow, amorphous powder, turning darker on exposure to light, having an odor suggesting damp hay and a very bitter taste.

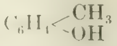
Solubility.—Soluble in water (1:22) and readily so in alcohol.

Incompatibility.—Colchicine is precipitated from solution by tannic acid.

Dose.—"Average dose: 0.0005 Gm. = 0.5 milligramme ($\frac{1}{128}$ grain)." (U. S. P.)

CRESOL.

Cresol.



$C_6H_4\begin{matrix}\diagup CH_3\\ \diagdown OH\end{matrix}$

A mixture of three isomeric cresols obtained from coal tar, freed from phenol, hydrocarbons, and water. Sometimes erroneously called cresylic acid. Cresol is methyl phenol, the three isomeric forms being known chemically as ortho-, meta-, and para-cresol.

Character.—A colorless or straw-colored refractive liquid having a phenol-like odor and turning yellowish-brown on prolonged exposure to light.

Solubility.—Soluble in water (1:60) and miscible in all proportions with alcohol and glycerin.

Miscible with alkali hydroxide solutions, forming alkali cresolates, homologous with alkali phenolates.

Purity.—"If 1 Cc. of cresol be mixed with 1 Cc. of glycerin, a clear solution should be produced, from which, on the addition of 1 Cc. of water, the cresol should completely separate (absence of, and distinction from, phenol)."

Dose.—"Average dose: 0.05 Cc. (1 minim)." (U. S. P.)

Much has been written concerning the germicidal and toxic properties of cresol. It is generally held that cresol is more toxic to bacteria than is phenol, but that it is less toxic to higher animals than is the latter. Tollens (Arch. f. exper. Path. u. Pharm., 52, p. 220; 1905) finds that para-cresol is more than twice as toxic for mice as is phenol, ortho-cresol has the same toxicity, while meta-cresol is less toxic. Thus the toxicity of a cresol will depend upon the relative proportion of the three constituents and these seem to vary in different preparations; Tollens finds some specimens to be more toxic than phenol. The U. S. Pharmacopœia does not specifically state the proportions in which the three cresols are present, although it fixes limits for the boiling point, specific gravity, and solubility. A preparation on the market under the name of *tricresol* (*enterol*) is said to contain 35 per cent of ortho-cresol, 40 per cent of meta-cresol, and 25 per cent of para-cresol; it is soluble to the extent of 2.2 to 2.55 per cent in water. The physiological action of the cresols is almost identical with that of phenol.

The cresols are constituents of coal tar and other crude antiseptic substances. Being but slightly soluble in water, they are often used in the form of emulsions or are dissolved with the aid of salts or of soap. The official Liquor Cresolis Compositus (q. v.) belongs to the latter class; it is practically identical with the Liquor Cresoli saponatus of the German Pharmacopœia and the preparation on the market known as *lysol*. The mixtures known as *creolins* usually contain impure cresol dissolved with the aid of rosin soap; they usually form emulsions when diluted with water. In *solveol* and *solutol* the cresols are held in solution by means of salts. A vast number of similar compounds are upon the market, usually under fanciful names.

Losophan and *europhen* are iodine compounds of cresol. *Kresamine* is an aqueous solution of tricresol and ethylenediamine.

ELIXIR ADJUVANS.

Adjuvant **Elixir.**

This is made by the addition of Fluidextract of Glycyrrhiza to Aromatic Elixir. An excellent vehicle for bitter or nauseous remedies.

A somewhat similar elixir is to be found in the National Formulary under the same name.

ELIXIR FERRI, QUININÆ ET STRYCHNINÆ PHOSPHATUM.

Elixir of Iron, Quinine and Strychnine Phosphates.

This is the official representative of a large class of popular preparations on the market; the formula is an improvement on a similar one in the National Formulary. (See also Glyceritum Ferri, Quininæ et Strychninæ Phosphatum). Some of the commercial elixirs bearing this name are said to contain no phosphoric acid.

Dose.—"Average dose: 4 Cc. (1 fluidrachm.)." (U. S. P.) Each fluidrachm contains 0.0647 Gm. (1 grain) of ferric phosphate, 0.0324 Gm. (½ grain) of quinine, and 0.001 Gm. ($\frac{1}{64}$ grain) of strychnine.

EMPLASTRUM ADHÆSIVUM.

Adhesive Plaster.

This is to take the place of Emplastrum Resinæ (U. S. P. 1890), from which it differs chiefly in the substitution of rubber for rosin. For formula and method of preparation see the Pharmacopœia.

EMULSUM OLEI MORRHUÆ.

Emulsion of Cod Liver Oil.

A standard official preparation, containing 50 per cent of cod liver oil, which might well replace many of the proprietary articles.[a] It may be flavored, to suit the taste, with Oil of Gaultheria, Oil of Bitter Almond, etc.

Dose.—"Average dose: 8 Cc. (2 fluidrachms)." (U. S. P.)

EMULSUM OLEI MORRHUÆ CUM HYPOPHOSPHITIBUS.

Emulsion of Cod Liver Oil with Hypophosphites.

Similar to the above, but containing the hypophosphites of calcium, potassium, and sodium.

Dose.—"Average dose: 8 Cc. (2 fluidrachms)." (U. S. P.)

EMULSUM OLEI TEREBINTHINÆ.

Emulsion of Oil of Turpentine.

A 15 per cent (by volume) emulsion of rectified oil of turpentine, containing 5 per cent (by volume) of expressed oil of almond.

Dose.—"Average dose: 4 Cc. (1 fluidrachm)." (U. S. P.) One fluidrachm contains about 9 minims of oil of turpentine.

The National Formulary gives a somewhat similar preparation under the name of Emulsio Olei Terebinthinæ.

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[a] The character of some of these preparations is shown by the statement (Jour. Amer. Med. Assoc., 44, p. 1943; 1905) that a specimen of a "Tasteless Cod Liver Oil" contained no oil whatever.

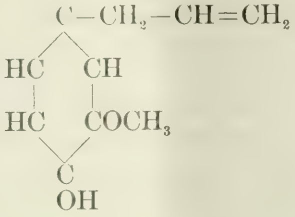
EUGENOL.

Eugenol.

$C_6H_3(OH)(OCH_3).C_3H_5\,4:3:1$

An unsaturated, aromatic phenol obtained from Oil of Cloves and other sources.

Chemistry.—Chemically it is para-oxy-meta-methoxy-allyl-benzol having the formula:



Character.—A colorless, or pale yellow, thin liquid, highly refractive, and having a strongly aromatic odor of cloves and a pungent, spicy taste.

Solubility.—Almost insoluble in water, easily soluble in alcohol; should be soluble in 2 parts of 70 per cent alcohol.

This is the chief constituent of Oil of Cloves and may be used instead of the latter; it is also the chief constituent of Oil of Pimenta.

Dose.—"Average dose: 0.2 Cc. (3 minims)." (U. S. P.)

Caution.—It should be kept in well-stoppered amber-colored bottles, in a cool place, protected from light. Exposure to air causes the oil to become darker and thicker.

Derivatives.—Eugenol acetamide and eugenolcarbinol have been recommended as local anæsthetics and antiseptics; eugenol iodide is said to resemble aristol. *Benzeugenol* is the benzoic ether of eugenol.

EXTRACTUM MALTI.

Extract of Malt.

This and Maltum (q. v.) are reintroductions into the Pharmacopœia of articles admitted to the 1880 revision but dismissed in 1890; it is contained in the National Formulary. Extractum Malti Fluidum, N. F., is a hydro-alcoholic extract.

Properties.—Malt extract consists of easily assimilable carbohydrates—maltose and dextrin—and small quantities of proteids; the ash contains the phosphates of calcium and magnesium. If the malt has not been overheated (by which the diastase would be destroyed), and if the extract is prepared according to the U. S. Pharmacopœia process, the preparation, when fresh, will contain diastase which is an efficient ferment for the conversion of starch into dextrose; the diastatic power, however, rapidly deteriorates on keeping.

Malt extract is contained in numerous infant foods and in malted milks. It is said that much glucose is frequently added to the malt extracts on the market. Many liquid "malt extracts" contain considerable quantities of alcohol, and are very similar to beer.

Dose.—"Average dose: 16 Cc. (4 fluidrachms)." (U. S. P.)

It should be kept in well-closed vessels in a cool place.

EXTRACTUM RHAMNI PURSHIANÆ.

Extract of Cascara Sagrada.

Also official in British Pharmacopœia. This solid extract and the Aromatic Fluidextract of Cascara Sagrada are two new preparations of the bark introduced into the Pharmacopœia. Formerly, only the fluid extract was official. One part of the solid extract represents the activity of four parts by weight of the bark.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.) This represents 1 Gm. (15 grains) of the bark and is equal to the Pharmacopœial dose of the fluidextract, namely, 1 Cc. (15 minims).

For a recent discussion of the chemistry of Cascara Bark see Jowett, Proc. Amer. Pharm. Assoc., 1904, p. 288.

EXTRACTUM SCOPOLÆ.

Extract of Scopola.

This is prepared by evaporating, to a pilular consistence, the Fluidextract of Scopola (q. v.). The latter is prepared from the rhizome of *Scopola carniolica*, a plant closely related, in its characters and properties, to belladonna and hyoscyamus.

The U. S. Pharmacopœia demands that the extract of scopola contain 2 per cent of mydriatic alkaloids; for method of assay see Pharmacopœia.

Dose.—"Average dose: 0.010 Gm. = 10 milligrammes ($\frac{1}{6}$ grain)." (U. S. P.)

EXTRACTUM SUMBUL.

Extract of Sumbul.

Prepared from the Fluidextract of Sumbul (q. v.).

In the U. S. Pharmacopœia 1890 the only preparation of Sumbul was the tincture; this is now dropped and the extract and fluidextract admitted.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

FLUIDEXTRACTA.

Fluidextracts.

In the 1890 Pharmacopœia the solid and the fluid extracts were grouped together; this resulted, at times, in confusion both as to identity and strength of the several preparations. To avoid this, the new Pharmacopœia gives to the fluidextracts a new alphabetic position, grouping them by themselves; thus Extractum Aconiti Fluidum (U. S. P., 1890) becomes Fluidextractum Aconiti in the Eighth Decennial Revision. Wherever practicable, assay processes have been introduced, thus ensuring preparations of definite and uniform strength. Many of the solid extracts are directed by the Eighth Revision to be made from the fluidextracts.

Three fluidextracts, those of Lobelia, Sanguinaria and Squill, formerly made with alcohol or (Sanguinaria) with alcohol, acetic acid and water, are now made with hydro-acetic acid.

FLUIDEXTRACTUM BERBERIDIS.

Fluidextract of Berberis.

Prepared from Berberis (q. v.).

Dose.—"Average dose: 2 Cc. (30 minims)." (U. S. P.)

FLUIDEXTRACTUM EUONYMI.

Fluidextract of Euonymus.

The solid extract of Euonymus, which was already official, is now prepared from this fluidextract.

Dose.—"Average dose: 0.5 Cc. (8 minims)." (U. S. P.)

FLUIDEXTRACTUM GRANATI.

Fluidextract of Pomegranate.

Hitherto only the bark of the stem and root of Granatum (Pomegranate) has been official: it was often administered in the form of a decoction (official in the Br. P.), but this was very unpleasant to take, owing to the large amount of tannic acid present. A mixture of the tannates of the most important active constituents (four alkaloids) of Granatum has also been introduced under the name Pelletierinæ Tannas (q. v.).

Dose.—" Average dose: 2 Cc. (30 minims)." (U. S. P.)

FLUIDEXTRACTUM QUERCUS.

Fluidextract of Quercus.

Prepared from the official Quercus (Quercus Alba, U. S. P., 1890), the bark of the white oak. The medicinal properties depend upon the tannin contained in the bark.

Dose.—"Average dose: 1 Cc. (15 minims)." (U. S. P.)

FLUIDEXTRACTUM QUILLAJÆ.

Fluidextract of Quillaja.

The tincture of Quillaja (soapbark) was already official.

It has sometimes been proposed to use quillaja or one of its most important constituents (saponin) as an emulsifying agent for cod-liver oil, etc.; in the present state of our knowledge such use would seem to be unjustifiable (see Keirle and Dunning, Proc. Amer. Pharm. Assoc., 52, p. 402).

Dose.—"Average dose: 0.2 Cc. (3 minims)." (U. S. P.)

This fluidextract is contained in the National Formulary.

FLUIDEXTRACTUM RHAMNI PURSHIANÆ AROMATICUM.

Aromatic Fluidextract of Cascara Sagrada.

This is the Aromatic Fluidextract of Cascara Sagrada of the National Formulary. It differs from the Fluidextract, which was already official, in having an aromatic flavor and being devoid of the intensely bitter principle occurring in the bark. It might well take the place of a number of commercial articles. The Extractum Rhamni Purshianæ (q. v.) is also a new introduction.

Dose.—"Average dose: 1 Cc. (15 minims)." (U. S. P.)

FLUIDEXTRACTUM SCOPOLÆ.

Fluidextract of Scopola.

Prepared from Scopola (q. v.) and containing 0.5 per cent of the mydriatic alkaloids of this drug. A method of assay is given in the U. S. Pharmacopœia.

Dose.—"Average dose: 0.05 Cc. (1 minim)." (U. S. P.)

This dose contains 0.00025 gram ($\frac{1}{256}$ grain) of the scopola alkaloids.

FLUIDEXTRACTUM STAPHISAGRIÆ.

Fluidextract of Staphisagria.

Prepared from the seeds, the official part, of *Delphinium staphisagria* (Stavesacre). Several bases have been described as occurring in stavesacre, but they may all be decomposition products of the aconitine-like alkaloid, delphinine.

Dose.—"Average dose: 0.05 Cc. (1 minim)." (U. S. P.)

FLUIDEXTRACTUM SUMBUL.

Fluidextract of Sumbul.

This and the Extract of Sumbul (q. v.) are new additions, while the tincture (U. S. P., 1890) is dropped.

Dose.—"Average dose: 2 Cc. (30 minims)." (U. S. P.)

GAMBIR.

Gambir.

This takes the place of Catechu of the Pharmacopœia of 1890. Catechu is an extract prepared from the wood of *Acacia catechu* (natural order Leguminosæ); Gambir is an extract prepared from the leaves and twigs of *Uncaria gambir* (fam. Rubiaceæ.). Both drugs contain a large percentage of tannic acid and its compounds. Gambir was introduced on account of the difficulty of obtaining in the market true Acacia catechu. The Tinctura Catechu Composita and the Trochisci Catechu (U. S. P., 1890) are replaced by Tinctura Gambir Composita and Trochisci Gambir.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

GELATINUM.

Gelatin.

Official in the British Pharmacopœia under the same name; in the German as Gelatina alba. The U. S. Pharmacopœia demands that upon ignition it leave not more than 2 per cent of ash. Most of the gelatin on the market has an acid reaction.

GELATINUM GLYCERINATUM.

Glycerinated Gelatin.

A mixture of equal parts of gelatin and glycerin. The mass when cold is solid, but easily melts on applying gentle heat.

Basis for suppositories and bougies.

Of late years both ointments and cerates have been largely superseded, especially in Europe, by dermatologic pastes and glycerogelatins. The former are mixtures of the medicinal agents with starch, dextrin, or kaolin, and glycerin, soft soap, petrolatum, or lard, and are intended chiefly for antiseptic, astringent, or germicidal effects. The glycero-gelatins are firmer than the pastes, and must be melted before they can be applied.

GLANDULÆ SUPRARENALES SICCÆ.

Desiccated Suprarenal Glands.

The cleaned, dried, and powdered suprarenal glands of the sheep or ox, freed from fat.

Properties.—A light, yellowish, amorphous powder, having a slight characteristic odor; partially soluble in water. One part of the dried glands represents approximately 6 parts of fresh glands.

Aqueous extracts of the glands rapidly deteriorate on keeping and should, therefore, be freshly prepared.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

The blood-pressure raising constituent of the suprarenal glands is upon the market under the names *adnephrin*, *adrenaline*, *epinephrine*, *epirenan*, *hemisine*, *paranephrin*, *suprarenalin*, *suprarenin*, etc.

GLANDULÆ THYROIDEÆ SICCÆ.

Desiccated Thyroid Glands.

The cleaned, dried, and powdered thyroid glands of the sheep, freed from fat.

A liquid preparation is official in the British Pharmacopœia.

Properties.—A yellowish amorphous powder, having a slight peculiar odor; partially soluble in water.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

Numerous extracts of the thyroid are upon the market, many of them purporting to be the active constituent. *Aiodine*, *opothyroidine*, and *thyroglandine* are other preparations on the market.

Thyreoidectin and *rodagen* represent a new series of preparations quite recently introduced which must not be confused with the above; their action is stated to be exactly the opposite of that of the thyroid preparations. *Thyreoidectin* is prepared from the blood, *rodagen* from the milk, of animals from which the thyroids have been removed.

GLYCERITUM FERRI, QUININÆ ET STRYCHNINÆ PHOSPHATUM.

Glycerite of the Phosphates of Iron, Quinine and Strychnine.

This preparation is a concentrated form of one of the popular and useful combinations of tonics which might well replace some of the many commercial articles; it is prepared according to a fixed and definite formula (see U. S. P.), whereas the latter class are made according to the special formulæ of the different manufacturers. (See also Elixir Ferri, Quininæ et Strychninæ Phosphatum.) This glycerite is a stable solution which may be kept in stock, and from which the Syrup of the Phosphates of Iron, Quinine and Strychnine may readily be prepared.

Dose.—"Average dose: 1 Cc. (15 minims)." (U. S. P.) 1 Cc. contains 0.080 Gm. = 80 milligrammes ($1\frac{1}{4}$ grains) of soluble ferric phosphate, 0.104 Gm. = 104 milligrammes ($1\frac{3}{5}$ grains) of quinine, and 0.0008 Gm. = 0.8 milligrammes ($\frac{1}{80}$ grain) of strychnine. The ratio of quinine to strychnine is four times as great in the glycerite as in the elixir.

GUAIACOL.

Guaiacol.

$C_6H_4(OH)(OCH_3)1:2$

One of the chief constituents of creosote; prepared either from beechwood tar, or synthetically. Chemically it is the monomethyl ether of pyrocatechin (orthodihydroxy-benzene).

Character.—Either a clear, colorless or light yellow, oily fluid, or colorless, prismatic crystals, which melt at 28.5° C. It has an agreeable, aromatic odor.

Solubility.—Soluble in water (1:53), glycerin (1:1), and easily in alcohol. Being phenolic in character, it readily dissolves in caustic alkalies and forms salts with a large number of acids, one of which (the carbonate) has been made official.

Of late years creosote has been largely superseded by guaiacol, upon which the value of creosote no doubt depends.

Dose.—"Average dose: 0.5 Cc. (8 minims)." (U. S. P.)

Caution.—It should be preserved in dark, amber-colored bottles, protected from the light. Guaiacol which has become dark from exposure to light may be rendered colorless by redistillation. To be used cautiously with other drugs of similar physiologic action, e. g., Creosotum, Resorcinol, Phenylis Salicylas, etc.

GUAIACOLIS CARBONAS.

Guaiacol Carbonate.

$(C_6H_4(OCH_3)O)_2.CO$

A guaiacol derivative obtained by the action of carbonyl chloride upon sodium-guaiacolate.

Also known as *duotal.*

Character.—A white, crystalline, neutral powder, nearly odorless and tasteless.

Solubility.—Insoluble in water; soluble in cold (1:48), more so in hot, alcohol; slightly soluble in glycerin and fatty oils.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

Other Guaiacol Compounds.—Numerous combinations of guaiacol with other acids, etc., are in the market, such as the benzoate (*benzosol*), benzyl-guaiacol, cacodylate (*cacodyliacol*), cinnamate (*styracol*), phosphate, salicylate (*guaiacol-salol*), sulphonate, valerianate (*geosot*), etc.

HAMAMELIDIS CORTEX.

Hamamelis Bark.

Both the bark and twigs, and the leaves of *Hamamelis virginiana* are now recognized by the Pharmacopœia; the former are introduced under the above title and the old Hamamelis (U. S. P., 1890) becomes Hamamelidis Folia.

Dose.—"Average dose: 2 Gm. (30 grains)." (U. S. P.)

HEXAMETHYLENAMINA.

Hexamethylenamine.

$(CH_2)_6N_4$

A condensation product of formaldehyde and ammonia. Chemically it is hexamethylene tetramine. Also known as *aminoform*, *ammonio-formaldehyde*, *cystamine*, *cystogen*, *formin*, *uritone*, and *urotropin.*

Character.—Colorless, lustrous, odorless crystals, having a sweetish, then somewhat bitter, taste. Its aqueous solution has an alkaline reaction to litmus.

Solubility.—Easily soluble in water (1:1.5), less so in alcohol (1:10). In solution it is decomposed by dilute sulphuric acid with liberation of formaldehyde; it is precipitated by tannic acid and mercuric chloride.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

Caution.—It should be kept in well-stoppered bottles.

Allied Compounds.—Hexamethylene-tetramine readily forms compounds with a large number of substances; among those suggested for use in medicine the following may be mentioned:

Hexamethylenamine salicylate, *urotropin salicylate*, or *saliformin;* a colorless, crystalline powder of nauseous, sweetish, astringent taste.

Hexamethylenamine-ethylbromide, *bromalin*, or *bromoformin;* a colorless, crystalline powder of a sweetish saline taste.

Hexamethylenamine-tannin, *tannopin*, or *tannon;* a brown tasteless powder, nearly insoluble in water and alcohol.

Dioxybenzol-hexamethylenamine, *hetralin*, contains 60 per cent of hexamethylenamine.

Chinotropin and *chinoformin* are quinates of hexamethylenamine. *Helmitol* is a recently introduced compound of hexamethylenamine with anhydromethylene citric acid. *Citarin* (sodium anhydromethylene citrate) is another compound from which formaldehyde is split off in the organism.

HOMATROPINE HYDROBROMIDUM.

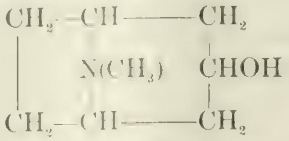
Homatropine Hydrobromide.

$C_{16}H_{21}NO_3.HBr$

Official under the same name in the British Pharmacopœia; as Homatropinum hydrobromicum in the German and Swiss Pharmacopœias.

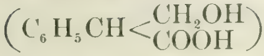
"The hydrobromide of an alkaloid obtained by the condensation of tropine and mandelic acid."

Chemistry.—Atropine may be broken up, by the action of alkalies, into an alkaloid, tropine, and an aromatic acid, tropic acid. Tropine is a pyridine derivative having the structural formula



$$\begin{array}{lll} CH_2-CH & \text{———} & CH_2 \\ | & & | \\ & N(CH_3) & CHOH \\ | & & | \\ CH_2-CH & \text{———} & CH_2 \end{array}$$

Tropine forms ester-like compounds with many acids; the compounds with aromatic acids are called tropeins. Homatropine is one of these tropeins; as stated above, it is formed by the union of tropine and mandelic acid; the latter is phenylglycollic acid $\left(C_6H_5CH<\begin{matrix}OH\\COOH\end{matrix}\right)$.

Tropic acid (the acid of atropine) is phenylhydracrylic acid  $\left(C_6H_5CH<\begin{matrix}CH_2OH\\COOH\end{matrix}\right)$. Scopolamine (hyoscine) is formed by the union of tropic acid with scopoline, a compound similar to tropine.

Properties.—Small, colorless, odorless, rhombic crystals or crystalline powder, having a bitter taste. Soluble in 5.7 parts of water and 32.5 parts of alcohol. It should be kept in well-stoppered vials protected from light.

Dose.—"Average dose: 0.0005 Gm. = 0.5 milligramme ($\frac{1}{128}$ grain)." (U. S. P.)

The physiological action of homatropine is similar to that of atropine, but it is less poisonous. The mydriatic effects of homatropine appear more quickly and pass off in a shorter time than do those of atropine.

The hydrochloride, sulphate, and salicylate of homatropine have been used, but they seem to have no advantage over the hydrobromide.

Euphthalmin is a recently introduced mydriatic, having a physiological action very similar to homatropine; it is a mandelic acid derivative of *beta-eucaine.*

HYDRASTINA.

Hydrastine.

$C_{21}H_{21}NO_6$

An alkaloid obtained from Hydrastis. The U. S. Pharmacopœia, Eighth Decennial Revision, demands that Hydrastis contain not less than 2.5 per cent of Hydrastine. Hydrastis contains also the alkaloids berberine to the extent of 3.5 to 5 per cent, and canadine, but its physiological action is due largely to the Hydrastine. Hydrastine is frequently called in commerce the "white alkaloid of hydrastis."

The alkaloid hydrastinine (the hydrochloride of which is official) is obtained from Hydrastine by the action of oxidizing agents. The alkaloid Hydrastine should not be confused with the mixture of hydrastine, berberine, etc., sold under the same name.

Properties.—"White, to creamy white, glistening prisms, sometimes of large size, possessing a bitter taste, and permanent in the air." Almost insoluble in water; soluble in 135 parts of alcohol.

"If a crystal of Hydrastine be dissolved in diluted sulphuric acid and a solution of potassium permanganate (1 in 10) be added, a blue fluorescence will be developed (distinction from hydrastinine)."

Dose.—"Average dose: 0.010 Gm. = 10 milligrammes ($\frac{1}{5}$ grain)." (U. S. P.)

Hydrastine is extensively used in preparing the so-called "colorless hydrastis," which is a solution of the alkaloid, in a mixture of water and glycerin, with the aid of hydrochloric or sulphuric acid.

IODOLUM.

Iodol.

C_4I_4NH

Tetraiodopyrrol, a derivative of the base pyrrol (C_4H_5N) obtained by the direct action of iodine upon the base in the presence of alcohol.

Properties.—A light, grayish-brown, crystalline powder without odor or taste. Very slightly soluble in water (1:4900), much more so in alcohol (1:9); soluble in fixed oils.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

This is one of the vast number of compounds proposed in the last few years as substitutes for iodoform. The iodine of iodol is apparently less easily split off the molecule than that of iodoform, and it is said to be less liable to produce poisoning.

Other iodine compounds.—Among the enormous number of other iodine compounds proposed as substitutes for iodoform may be mentioned: Thymolis Iodidum (U. S. P., Eighth Decennial Revision, commonly known as *aristol*); *airol* (bismuth oxy-iodo-gallate, with 20 per cent of iodine); *sanoform* (diiodo-methylsalicylate); the potassium, sodium, mercury, and zinc salts of *sozoiodolic acid* (phenol-sulphonic acid in which two atoms of hydrogen have been substituted by two atoms of iodine—$C_6H_2I_2<\begin{matrix}(OH)\\SO_2OH\end{matrix}$), known as *sozoiodolates; nosophen*, *antinosine*, and *eudoxine* (all iodine compounds of phenolphthalein); *losophan* and *europhen* (combinations of cresol and iodine); *loretin* and *vioform* (derivatives of quinoline containing iodine); *diiodoform* (tetraiodoethylene, C_2I_4); sodium diiodosalicylate; acetone iodide; iodoso-benzoic acid, etc.

Various mixtures of iodoform and other substances have been made with the object of concealing the odor of the former; thus, *eka-iodoform* is said to consist of iodoform and paraformaldehyde; *anozol* of iodoform and thymol; *iodoformin* of iodoform and hexamethylene tetramine, etc. *Iodoformogen* is a proteid compound of iodoform. Iodoformum Aromaticum, N. F., is a mixture of iodoform and coumarin.

KAOLINUM.

Kaolin.

Official in the British Pharmacopœia under same name. A native aluminum silicate, consisting largely of the pure silicate $H_2Al_2Si_2O_8+H_2O$. It is a very pure clay.

Properties.—Soft, white or yellowish-white powder, odorless, and having an earthy or clay-like taste.

Insoluble in water.

Kaolin is contained in Cataplasma Kaolini (q. v.). It is used in dusting powders; also in pills containing easily reduced bodies, such as silver nitrate or potassium permanganate, which can not be mixed with ordinary excipients.

LIQUOR ANTISEPTICUS.

Antiseptic Solution.

A solution of mild aromatics and antiseptics similar to certain commercial preparations. Among other things it contains about 2 per cent of boric acid, 0.1 per cent each of benzoic acid and thymol, and 25 per cent of alcohol.

Dose.—"Average dose: 4 Cc. (1 fluidrachm)." (U. S. P.)

LIQUOR CHLORI COMPOSITUS.

Compound Solution of Chlorine.

Chlorine Water.

This takes the place of Aqua Chlori (U. S. P., 1890). The method of preparation (for which see the Pharmacopœia) is materially changed and simplified. When freshly prepared it contains about 0.4 per cent of chlorine with some oxides of chlorine and potassium chloride.

Dose.—"Average dose: 4 Cc. (1 fluidrachm)." (U. S. P.)

LIQUOR CRESOLIS COMPOSITUS.

Compound Solution of Cresol.

Liquor Cresoli saponatus is the official German title of a somewhat similar preparation. It is essentially a linseed-oil-soap solution of cresol, of 50 per cent strength; the soap dissolves the cresol as do alkalies. This is a mixture of much more definite composition than many commercial preparations of similar nature.

For practical use the 50 per cent solution is diluted with water to various degrees according to need.

Other preparations of this nature are known as *creolin*, *disinfectol*, *enterocresol*, *germol*, *cresolin*, *lysol*, *lysitol*, etc. (See Cresol).

LIQUOR FORMALDEHYDI.

Solution of Formaldehyde.

An aqueous solution containing not less than 37 per cent by weight of absolute Formaldehyde ($H.COH$); an assay process is provided. Official in the German Pharmacopœia as Formaldehydum solutum and variously known as *formalin*, *formol*, *methylaldehyde*, *oxymethylene*, *methanal*, etc.

Properties.—Formaldehyde itself is a gas at ordinary temperatures having a very pungent odor. The various products on the market are solutions of the gas in water. Formaldehyde readily undergoes a molecular change called polymerization, whereby a solid form is obtained, known as paraformaldehyde or simply *paraform*. When a solution of formaldehyde is evaporated by heat, and more slowly by long standing, paraformaldehyde separates as a white, flocculent, nearly odorless mass, which is almost insoluble in water, alcohol, or ether, and which begins to sublime below 100° C. When heated, paraformaldehyde vaporizes and reforms the gaseous formaldehyde. It occurs in the market in tablets which are employed for disinfecting purposes.

Formaldehyde is very active chemically; it has a strong reducing action on silver, copper, and mercury salts, and unites readily with ammonia, forming the official odorless Hexamethylenamine (which see). It is easily oxidized by hydrogen dioxide and potassium permanganate, especially in alkaline solution.

Several dusting powders containing formaldehyde, in combination, have been introduced; thus, *glutol* is a compound of gelatin and formaldehyde, *amyloform*, of starch and formaldehyde, etc.

Formaldehyde is a constituent of many food preservatives, embalming preparations, etc.

Caution.—Keep well stoppered in a moderately cool place and protected from light.

LIQUOR SODII PHOSPHATIS COMPOSITUS.

Compound Solution of Sodium Phosphate.

A fairly stable concentrated solution containing 1 Gm. of Sodium Phosphate in each Cc.

Dose.—"Average dose: 8 Cc. (2 fluidrachms)." (U. S. P.)

Keep well stoppered and moderately warm.

MAGNESII SULPHAS EFFERVESCENS.

Effervescent Magnesium Sulphate.

A similar compound is official under the same name in the British Pharmacopœia; known also as effervescent Epsom salt, and as magnesii sulphas granulatus.

This may take the place of Magnesii Citras Effervescens (U. S. P., 1890), which has been dropped.

Dose.—"Average dose: 16 Gm. (240 grains)." (U. S. P.)

MALTUM.

Malt.

This is a reintroduction: Maltum was official in the U. S. Pharmacopœia, 1880, but was dropped in 1890. Used for the preparation of Extractum Malti (q. v.).

MANGANI DIOXIDUM PRÆCIPITATUM.

Precipitated Manganese Dioxide.

To replace Mangani Dioxidum, U. S. Pharmacopœia, 1890. It consists chiefly of manganese dioxide (MnO_2), with small amounts of other oxides of manganese, corresponding to not less than 80 per cent of manganese dioxide. The Mangani Dioxidum (1890) was the native crude manganese dioxide and was only required to contain at least 66 per cent of the pure dioxide.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

MANGANI HYPOPHOSPHIS.

Manganese Hypophosphite.

$Mn(PH_2O_2)_2 + H_2O$

It should contain not less than 97 per cent of pure manganese hypophosphite.

Dose.—"Average dose: 0.200 Gm. = 200 milligrammes (3 grains)." (U. S. P.)

It is contained in Syrupus Hypophosphitum Compositus.

METHYLTHIONINÆ HYDROCHLORIDUM.

Methylthionine Hydrochloride.

Methylene Blue.

$C_{16}H_{18}N_3SCl$

Chemically, it is tetramethylthionine hydrochloride.

Properties.—Dark, green, crystalline powder, or prismatic crystals having a bronze-like luster.

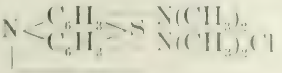
Readily soluble in water, somewhat less so in alcohol; the solutions are of a deep blue color.

Incompatible with potassium iodide. Reducing agents decolorize it.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

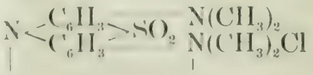
Caution.—Not to be confounded with commercial methylene blue, which is often the zinc chloride double salt of tetramethylthionine, is employed as a dye or stain, and is unfit for internal administration.

Methylene azure, a dye which has recently come into prominence as a stain in histology (Romanowsky's stain, for example, depends upon the methylene azure present in "ripened" methylene blue), is derived from methylene blue by the addition of two atoms of oxygen to the sulphur.



$$N \lessdot \begin{matrix} C_6H_3 \\ C_6H_3 \end{matrix} \gtrdot S \quad \begin{matrix} N(CH_3)_2 \\ N(CH_3)_2Cl \end{matrix}$$

Methylene blue



$$N \lessdot \begin{matrix} C_6H_3 \\ C_6H_3 \end{matrix} \gtrdot SO_2 \quad \begin{matrix} N(CH_3)_2 \\ N(CH_3)_2Cl \end{matrix}$$

Methylene azure (chloride)

Methylene azure is almost always present in even the best specimens of methylene blue. It may be detected by adding ammonia to a solution of methylene blue and then shaking with ether; the methylene azure passes into the ether, which is colored red.

OLEATA.

Oleates.

Three new oleates have been introduced and one (Oleatum Zinci, U. S. P., 1890) dropped.

For method of preparation see the Pharmacopœia.

The oleate of quinine is also in the National Formulary; other (unofficial) oleates in the National Formulary are: oleate of aconitine, lead oleate, and zinc oleate (different from the U. S. P. 1890 Oleate of Zinc).

OLEATUM ATROPINÆ.

Oleate of Atropine.

Containing 2 per cent of atropine.

OLEATUM COCAINÆ.

Oleate of Cocaine.

Containing 5 per cent of cocaine.

OLEATUM QUININÆ.

Oleate of Quinine.

Containing 25 per cent of quinine.

OPIUM GRANULATUM.

Granulated Opium.

Opium dried at a temperature not exceeding 85° C. and reduced to a coarse (No. 20) powder; Opii Pulvis is prepared similarly, but it is reduced to a very fine powder; the Pharmacopœia requires that it contain not less than 12 per cent nor more than 12.5 per cent of crystallized morphine when assayed by the pharmacopœial process; the powdered and deodorized opium are also required to contain this percentage of crystallized morphine.

The Tincture of Opium is now made from granulated opium instead of from powdered opium, as in the U. S. Pharmacopœia, 1890. Much of the tincture of opium on the market seems to be under strength; it is hoped that a more uniform product will be obtained by the use of granulated opium.

Dose.—"Average dose: 0.065 Gm. = 65 milligrammes (1 grain)." (U. S. P.)

PARAFFINUM.

Paraffin.

A mixture of solid hydrocarbons, chiefly of the methane series. The paraffin of the U. S. Pharmacopœia melts between 51.6° and 57.2° C. The "hard paraffin" (Paraffinum Durum) of the British Pharmacopœia melts between 54.4° and 57.2° C., while the "Paraffinum solidum" of the German Pharmacopœia melts between 74° and 80° C.

PELLETIERINÆ TANNAS.

Pelletierine Tannate.

"A mixture in varying proportions of the tannates of four alkaloids (punicine, iso-punicine, methyl-punicine, and pseudo-punicine) obtained from *Punica granatum*" (Pomegranate). Also known as punicinum tannicum. The alkaloids are also known as pelletierine, iso-pelletierine, etc.

Character.—A yellowish-white, odorless, amorphous powder, having an astringent taste, and a weak acid reaction.

Solubility.—Soluble in water (1:235), alcohol (1:12.6), and in warm dilute acids.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

The pelletierines of commerce seem to vary greatly; some are ten times as poisonous as others. While the U. S. Pharmacopœia names, as the average dose of the tannate, 0.25 Gm., some writers recommend 0.75 to 1.5 Gm. Very unpleasant effects are said to have resulted from 0.4 to 0.5 Gm.

PETROLATUM ALBUM.

White Petrolatum.

"A white unctuous mass of about the consistency of an ointment." It is purified petrolatum and is used in the preparation of the Ointment of Boric Acid, the Ointment of Phenol (Unguentum Acidi Carbolici, U. S. P., 1890), etc.

PHENOL LIQUEFACTUM.

Liquefied Phenol.

Practically the Acidum Carbolicum Liquefactum of the British and German Pharmacopœias. It is prepared from Phenol (Acidum Carbolicum, U. S. P., 1890) by the addition of distilled water in the proportion of 1 Gm. of the latter to 9 Gm. of Phenol. The U. S. Pharmacopœia Phenol must contain not less than 96 per cent of absolute phenol; whereas this preparation, Phenol Liquefactum, contains not less than 86.4 per cent, by weight, of absolute phenol and about 13.6

per cent, by weight, of water. Introduced on account of the ease of dispensing.

1 Gm. of Phenol (U. S. P.) equals about 1.11 Gm. of Liquefied Phenol, or 1 Gm. Liquefied Phenol equals about 0.9 Gm. of Phenol.

Dose.—"Average dose: 0.05 Cc. (1 minim)." (U. S. P.)

PILOCARPINÆ NITRAS.

Pilocarpine Nitrate.

$C_{11}H_{16}N_2O_2.HNO_3$

This is the only salt of pilocarpine official in the British Pharmacopœia. The revised U. S. Pharmacopœia contains two salts of pilocarpine; the Pilocarpinæ Hydrochloras (U. S. P., 1890) is retained under the name of Pilocarpinæ Hydrochloridum, and the nitrate is introduced.

Character.—Colorless, or white, shining crystals, odorless, and having a faintly bitter taste. It is permanent in the air, whereas the hydrochloride is deliquescent on exposure to the air.

Solubility.—Soluble in water (1:4), alcohol (1:60), in warm alcohol (1:16). The aqueous solution (1 in 100) is acid to litmus.

Dose.—"Average dose: 0.010 Gm. = 10 milligrammes ($\frac{1}{5}$ grain)." (U. S. P.)

PILULÆ LAXATIVÆ COMPOSITÆ.

Compound Laxative Pills.

An official preparation which may well replace a number of similar commercial articles.

Each pill contains 0.013 Gm. = 13 milligrammes ($\frac{1}{5}$ grain) Aloin, 0.0005 Gm. = 0.5 milligramme ($\frac{1}{128}$ grain) Strychnine, 0.008 Gm. = 8 milligrammes ($\frac{1}{8}$ grain) Extract of Belladonna Leaves, and 0.004 Gm. = 4 milligrammes ($\frac{1}{16}$ grain) of Ipecac.

Dose.—"Average dose: 2 pills." (U. S. P.)

Pilulæ Aloini, Strychninæ et Belladonnæ, N. F., contain, with the exception of the Ipecac, the same active ingredients and in the same proportions.

PILULÆ PODOPHYLLI, BELLADONNÆ ET CAPSICI.

Pills of Podophyllum, Belladonna and Capsicum.

Each pill contains 0.016 Gm. = 16 milligrammes ($\frac{1}{4}$ grain) Resin of Podophyllum, 0.008 Gm. = 8 milligrammes ($\frac{1}{8}$ grain) Extract of Belladonna Leaves, and 0.032 Gm. = 32 milligrammes ($\frac{1}{2}$ grain) Capsicum.

Dose.—"Average dose: 1 pill." (U. S. P.)

The same pill is included in the National Formulary under the same name.

PULVIS ACETANILIDI COMPOSITUS.

Compound Acetanilide Powder.

A mixture of Acetanilide, Caffeine, and Sodium Bicarbonate; it is a modification of the National Formulary article of the same name and has been known as Acetanilid Compound (Aulde). The sodium bicarbonate increases the solubility of the acetanilide.

Dose.—"Average dose: 0.500 Gm. = 500 milligrammes (7½ grains)." (U. S. P.)

Acetanilide is the cheapest of the common antipyretics and it is extensively used in the "headache powders" sold under such a variety of names. These powders frequently contain also caffeine and an alkaline salt, usually sodium bicarbonate or ammonium carbonate. (For analyses of a number of these powders see Jour. Amer. Med. Assoc., Vol. 44, p. 1790, 1905.)

QUININÆ SALICYLAS.

Quinine Salicylate.

$2C_{20}H_{24}N_2O_2.C_7H_6O_3 + H_2O$

Character.—Colorless needles, permanent in air, but acquiring a pinkish tinge after a time.

Solubility.—Soluble in cold water (1:77), somewhat more so in warm (1:35), in alcohol (1:11), and in glycerin (1:16).

It contains 68.79 per cent Quinine (the Bisulphate contains 59.1 per cent Quinine, the Hydrobromide 76.6 per cent, the Hydrochloride 81.8 per cent, the Sulphate 74.3 per cent). The Bisulphate is soluble in 8.5 parts of water, the Hydrobromide in 40 parts, the Hydrochloride in 18 parts, the Sulphate in 720 parts; the official alkaloid (containing 3 molecules of water) is soluble in 1,550 parts of water.

Dose.—"Average dose: 0.250 Gm.=250 milligrammes (4 grains)." (U. S. P.)

SABAL.

Sabal.

The partially dried ripe fruit of *Serenoa serrulata*, commonly known as saw palmetto.

Not much is known concerning the active principles of this drug, and there seems to have been no satisfactory investigation of its physiological action. Coblentz found in the pulp of the berries a volatile oil, a fixed oil, a fat, an alkaloid, a resin, dextrin, and glucose.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

SAFROLUM.

Safrol.

$C_6H_3.C_3H_5.(OOCH_2)1:3:4$

"The methylene ether of allyl pyrocatechol, found in oil of sassafras, camphor oil," etc.

Properties.—A colorless, or faintly yellow, liquid with a sassafras-like odor. Soluble in about its own volume of strong alcohol and in about 30 volumes of 70 per cent alcohol.

Safrol is contained to the extent of 80 per cent in the official oil of sassafras (Oleum Sassafras). Much of the safrol of commerce is obtained from camphor oil. Safrol is used to a considerable extent in flavoring drinks (sarsaparilla waters) and perfuming soaps. Heffter (Arch. f. exp. Path. u. Pharm., 35, p. 354) considers safrol to be the most poisonous of the volatile oils, and thinks its widespread use not unattended with danger. The effects of chronic poisoning are similar to those of yellow phosphorus.

Dose.—"Average dose: 0.3 Cc. (5 minims)." (U. S. P.)

SCOPOLA.

Scopola.

The dried rhizome of *Scopola carniolica*, Jacquin (Fam. *Solanaceæ*). Scopola is closely related to Belladonna and Hyoscyamus.

The Pharmacopœia demands that the drug contain not less than 0.5 per cent of alkaloids; it is assayed by the same process as are belladonna leaves.

Preparations admitted into the U. S. Pharmacopœia, Eighth Decennial Revision: Extract of Scopola and Fluidextract of Scopola (q. v.)

Dose.—"Average dose: 0.045 Gm. = 45 milligrammes (¾ grain)." (U. S. P.)

The alkaloid of Scopola is almost wholly hyoscyamine. The content of the alkaloids in Scopola is remarkably uniform (about 0.55 per cent), whereas the percentage of alkaloids in Belladonna varies from 0.2 to above 1 per cent.

There has been much discussion as to how far Scopola can replace Belladonna in therapeutics; its preparations are said to be used extensively in the manufacture of "belladonna plasters."

SCOPOLAMINÆ HYDROBROMIDUM.

Scopolamine Hydrobromide.

$C_{17}H_{21}NO_4.HBr + 3H_2O$

"The hydrobromide of an alkaloid obtained from plants of the *Solanaceæ;* chemically identical with Hyoscine Hydrobromide."

Although Hyoscine Hydrobromide, which was admitted into the U. S. Pharmacopœia, 1890, and Scopolamine Hydrobromide are identical, both names are used in the U. S. Pharmacopœia, Eighth Decennial Revision, as separate headings, because most people are familiar with the name Hyoscine but not with Scopolamine. Scopolamine is formed by the union of tropic acid with scopoline, a compound similar to tropine. (See Homatropine.)

In the British Pharmacopœia Scopolamine Hydrobromide is used as a synonym for Hyoscine Hydrobromide; in the German Pharmacopœia only the name Scopolaminum hydrobromicum is retained.

Dose.—"Average dose: 0.0005 Gm. = 0.5 milligramme ($\frac{1}{128}$ grain)." (U. S. P.)

SERUM ANTIDIPHTHERICUM.

Antidiphtheric Serum.

Diphtheria Antitoxin.

"A fluid separated from the coagulated blood of a horse immunized through the inoculation of diphtheric toxin."—U. S. Pharmacopœia. The German Pharmacopœia recognizes also the dried serum.

Antidiphtheric serum gradually loses its power, the loss in one year varying between 10 and 30 per cent.

"The standard of strength, expressed in units of antitoxic power, should be that approved or established by the U. S. Public Health and Marine-Hospital Service." (U. S. P.) All manufacturers selling diphtheria antitoxin in the District of Columbia, or in States other than the one in which it is manufactured, must secure a license issued by the Secretary of the Treasury on recommendation of the Surgeon-General of the Public Health and Marine-Hospital Service. (For a full discussion of the official standard, see Rosenau, M. J.: The immunity unit for standardizing diphtheria antitoxin, Bulletin No. 21, Hygienic Laboratory, U. S. Public Health and Marine-Hospital Service, 1905.)

Dose.—"Average dose: 3,000 units. Immunizing dose for well persons: 500 units." (U. S. P.)

Caution.—Should be kept in sealed glass containers in a dark place at temperatures between 4.5° and 15° C. (40° and 59° F.).

SODII ARSENAS EXSICCATUS.

Exsiccated Sodium Arsenate.

Na_2HAsO_4

This is the same as the Sodii Arsenas of the British Pharmacopœia; also known as anhydrous sodium arsenate.

Properties.—An amorphous, odorless, white powder. Permanent in dry air. Soluble in 3 parts of water; very soluble in boiling water.

This is prepared from Sodium Arsenate (already official) by expelling by heat the seven molecules of water of the latter. The hydrous sodium arsenate (Sodii Arsenas, U. S. P.) is efflorescent in dry air and somewhat deliquescent in moist air; hence the percentage of arsenic is somewhat uncertain. The new preparation is permanent in dry air. The hydrous sodium arsenate contains 40.4 per cent of water; hence, a given weight of this substance will contain but little more than half as much arsenic as an equal weight of the exsiccated. The average dose of the latter is accordingly placed at about one-half that of the former.

Dose.—"Average dose: 0.003 Gm. = 3 milligrammes ($\frac{1}{20}$ grain)." (U. S. P.)

SODII CARBONAS MONOHYDRATUS.

Monohydrated Sodium Carbonate.

$Na_2CO_3 + H_2O$

Sodii Carbonas and Sodii Carbonas Exsiccatus (U. S. P., 1890) are dismissed from the Pharmacopœia and the monohydrated salt introduced.

The Sodii Carbonas contained ten molecules of water of crystallization or 63 per cent; part of this was lost on exposure to air, so that the salt was of uncertain strength. The Sodii Carbonas Exsiccatus contained about 26 per cent of water and probably corresponded to the formula $Na_2CO_3 + 2H_2O$. This salt was somewhat hygroscopic. The monohydrated salt does not effloresce at ordinary temperatures, nor does it absorb much moisture. It is therefore more uniform in composition than either of the others.

Character.—A white, crystalline, granular powder, odorless and having a strong alkaline taste. It is somewhat less soluble than Sodii Carbonas (U. S. P., 1890), but more so than Sodii Bicarbonas.

Solubility.—Soluble in water (1:2.9), in boiling water (1:1.8), in glycerin (1:8); insoluble in alcohol.

Dose.—"Average dose: 0.250 Gm. = 250 milligrammes (4 grains)." (U. S. P.)

SODII CITRAS.

Sodium Citrate.

$2Na_3C_6H_5O_7 + 11H_2O$

Properties.—A white, granular powder, odorless. It slowly effloresces on exposure to dry air. Soluble in 1.1 parts of cold water and in 0.4 part of boiling water; slightly soluble in alcohol.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

A carbonated solution of Sodium Citrate is contained in the National Formulary under the name of Liquor Sodii Citratis and in the German Pharmacopœia under the name Potio Riveri.

SODII PHOSPHAS EFFERVESCENS.

Effervescent Sodium Phosphate.

A similar compound is official under the same name in the British Pharmacopœia.

It is composed of the Exsiccated Sodium Phosphate, Sodium Bicarbonate, and Tartaric and Citric acids. It contains just sufficient sodium bicarbonate to neutralize the tartaric and citric acids when it is dissolved in water, and the carbonic acid gas liberated gives a pleasant acidulous and effervescent taste.

Dose.—"Average dose: 8 Gm. (120 grains)." (U. S. P.)

It should be kept in well stoppered bottles.

SODII PHOSPHAS EXSICCATUS.

Exsiccated Sodium Phosphate.

Na_2HPO_4

This is also called anhydrous sodium phosphate; it is obtained by driving off the water of crystallization of Sodium Phosphate (U. S. P.), which amounts to 60.3 per cent of the latter's weight. In a given weight of the exsiccated salt there are two and a half times as much sodium phosphate as in the same weight of the crystallized salt.

It is a white powder which absorbs moisture readily when exposed to the air and is gradually transformed into a salt of the composition $Na_2HPO_4 + 7H_2O$, which contains about 47 per cent of water; the latter salt is permanent.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

STRONTII SALICYLAS.

Strontium Salicylate.

$Sr(C_7H_5O_3)_2 + 2H_2O$

Character.—White, crystalline powder, odorless and having a sweetish saline taste.

Solubility.—Soluble in water (1:18) and alcohol (1:66), much more so when these are boiling.

Incompatibility. Incompatible with ferric salts, mineral acids, quinine salts in solution, spirit of nitrous ether, and sodium phosphate in powder.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

Keep in well stoppered bottles, protected from heat and light.

Strontium Lactate (U. S. P., 1890) has been dismissed from the Pharmacopœia; the bromide and iodide are retained.

STROPHANTHINUM.

Strophanthin.

A glucoside or mixture of glucosides, obtained from Strophanthus.

Character.—A white or faintly yellowish crystalline powder, containing varying amounts of water of crystallization. Permanent in the air. Taste intensely bitter; great caution should be used in tasting it.

Solubility.—Very soluble in water and diluted alcohol.

Dose.—"Average dose: 0.0003 Gm. = 0.3 milligramme ($\frac{1}{200}$ grain)." (U. S. P.)

Caution.—Keep in well stoppered amber colored bottles. Its solutions are very liable to decompose and should be freshly prepared. Exceedingly powerful poison. There is no known chemical assay for this drug and, as it is liable to variation, physicians would do well to secure specimens which have been tested physiologically.

STRYCHNINÆ NITRAS.

Strychnine Nitrate.

$C_{21}H_{22}N_2O_2.HNO_3$

Character.—Colorless, glistening needles, odorless, and having an intensely bitter taste; permanent in the air.

Solubility.—Soluble in water (1:42), alcohol (1:120), and glycerin (1:60); much more soluble in warm water or alcohol.

The hydrochloride (the only strychnine salt official in the Br. P.) and the Sulphate (already official in the U. S. P.) both contain water of crystallization and effloresce in dry air. The Nitrate (the only salt official in the P. G.) contains no water of crystallization and is permanent in the air.

Dose.—"Average dose: 0.001 Gm. = 1 milligramme ($\frac{1}{64}$ grain)." (U. S. P.)

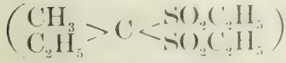
SULPHONETHYLMETHANUM.

Sulphonethylmethane.

(*Trional.*)

$(CH_3)(C_2H_5)C(SO_2C_2H_5)_2$

This substance is commonly known by the trade name, *trional*. It is official in the German Pharmacopœia under the name Methylsulfonalum; in the French and Swedish Pharmacopœias it is called Trional, and in the Austrian Pharmacopœia, Trionalum. It should not be confused with Sulphonmethanum (q. v.) (*sulphonal*).

Chemistry.—Chemically it is diethylsulphonemethylethylmethane  $\left(\begin{matrix}CH_3\\C_2H_5\end{matrix}>C<\begin{matrix}SO_2C_2H_5\\SO_2C_2H_5\end{matrix}\right)$ and may be regarded as methane (CH_4) in which two hydrogen atoms are replaced by ethylsulphone ($SO_2C_2H_5$)

groups, one by a methyl (CH_3) and the fourth by an ethyl (C_2H_5) group. (For method of preparation see Sulphonmethanum.)

Character.—"Colorless, lustrous, odorless, crystalline scales which have a bitter taste in aqueous solution."

Solubility.—"Soluble in 195 parts of water, more readily in boiling water, and readily soluble in alcohol and ether."

It melts at 76° C.; hence if a test-tube containing some of the powder be placed in hot water, the substance will melt; Sulphonmethanum (the melting point of which is 125.5° C.) will not melt under these circumstances.

The aqueous solution should be neutral to litmus paper; no odor should be evolved when 1 Gm. is dissolved in 50 Cc. of boiling water.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

The German Pharmacopœia fixes 2 Gm. as the largest single dose and 4 Gm. as the maximum amount to be given in one day.

Caution.—Should not be combined in full dose with full doses of other drugs of similar physiological action, e. g., Hydrated Chloral, Chloralformamide, Sulphonmethane, etc.

SULPHONMETHANUM.

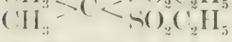
Sulphonmethane.

(*Sulphonal.*)

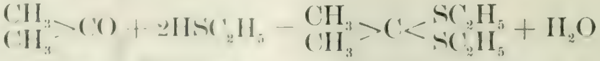
$(CH_3)_2C(SO_2C_2H_5)_2$

This substance is commonly known by the trade name, *sulphonal*—a name which has been adopted by the British and several other Pharmacopœias. It should not be confused with Sulphonethylmethanum (q. v.).

Chemistry.—Chemically it is diethylsulphonedimethylmethane



$\begin{matrix}CH_3\\CH_3\end{matrix}>C<\begin{matrix}SO_2C_2H_5\\SO_2C_2H_5\end{matrix}$ The chemical structure of this substance, as well as that of Sulphonethylmethane, is explained by the following reactions involved in one process of its manufacture: acetone and ethylmercaptan unite (under the influence of dry hydrochloric acid gas) to form dimethyldiethylmercaptol

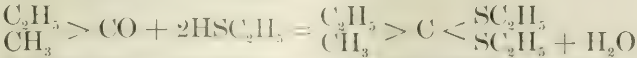


$$\begin{matrix}CH_3\\CH_3\end{matrix}>CO + 2HSC_2H_5 = \begin{matrix}CH_3\\CH_3\end{matrix}>C<\begin{matrix}SC_2H_5\\SC_2H_5\end{matrix} + H_2O$$

Acetone Ethylmercaptan Dimethyl-diethylmercaptol

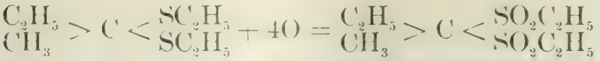
Through oxidation with potassium permanganate the sulphur atoms combine with oxygen to form sulphone (SO_2) groups; the resulting product is diethylsulphonedimethylmethane $(CH_3)_2C(SO_2C_2H_5)_2$—a name shortened in the Pharmacopeia to Sulphonmethane. It may be regarded as methane (CH_4) in which two hydrogen atoms are replaced by methyl (CH_3) groups and two by ethylsulphone ($SO_2C_2H_5$) groups.

If methylethylketone $\begin{matrix}C_2H_5\\CH_3\end{matrix}>CO$ be used in the above process instead of acetone, diethylsulphonemethylethylmethane (Sulphonethylmethanum, U. S. P.) is formed:



$$\begin{matrix}C_2H_5\\CH_3\end{matrix}>CO + 2HSC_2H_5 = \begin{matrix}C_2H_5\\CH_3\end{matrix}>C<\begin{matrix}SC_2H_5\\SC_2H_5\end{matrix}+H_2O$$

Methylethylketone Ethylmercaptan Methylethyldiethylmercaptol



$$\begin{matrix}C_2H_5\\CH_3\end{matrix}>C<\begin{matrix}SC_2H_5\\SC_2H_5\end{matrix}+4O = \begin{matrix}C_2H_5\\CH_3\end{matrix}>C<\begin{matrix}SO_2C_2H_5\\SO_2C_2H_5\end{matrix}$$

Diethylsulphonemethylethylmethane

The chemical name is abbreviated by the Pharmacopœia to "Sulphonethylmethane" which is commonly known as *trional;* the *tri* of the latter name indicates the presence of three ethyl (C_2H_5) groups. If two ethyl groups are introduced in the place of the methyl groups, the resulting compound $\begin{matrix}C_2H_5\\C_2H_5\end{matrix}>C<\begin{matrix}SO_2C_2H_5\\SO_2C_2H_5\end{matrix}$ is what is commonly known as *tetronal;* the latter name indicates the presence of four ethyl groups. As a general rule, the introduction of ethyl groups into a compound increases the hypnotic action.

Character. Colorless, odorless, and nearly tasteless prismatic crystals, permanent in the air.

Solubility.—Soluble in water (1:360) and in alcohol (1:47), much more so in boiling water (1:15) and boiling alcohol (1:2). It melts at 125.5° C. A pure preparation is neutral to litmus and evolves no odor when boiled with water.

Dose.—"Average dose: 1 Gm. (15 grains)." (U. S. P.)

The German Pharmacopœia fixes the maximum single dose at 2 Gm.; the maximum daily dose at 4 Gm. Kast recommends that not more than 2 Gm. be given to a man nor more than 1 Gm. to a woman at a single dose, and that if the drug is used for any length of time the administration be frequently discontinued for from one to several days. The urine should be watched, and if there are indications of hæmatoporphyrin the use of the drug should be discontinued.

SYRUPUS HYPOPHOSPHITUM COMPOSITUS.

Compound Syrup of Hypophosphites.

Syrupus Hypophosphitum cum Ferro (U. S. P., 1890), is dropped, but this may take its place, as it contains iron (although in considerably smaller proportion). It contains 5 hypophosphites, Hypophosphorous Acid, Quinine, and Strychnine. It is adopted (with slight changes) from the National Formulary and is similar to a number of well-known commercial articles.

Dose.—"Average dose: 8 Cc. (2 fluidrachms)." (U. S. P.)

TALCUM.

Talc.

A native hydrous magnesium silicate, official under the same name in the German Pharmacopœia. The German Pharmacopœia contains a dusting powder Pulvis salicylicus cum Talco consisting of salicylic acid, starch, and talc; some of the commercial talcum powders contain talc and boracic acid.

Properties.—Talc occurs as a grayish-green solid with waxy luster, or a white or pale gray powder. It feels greasy to the touch, hence it is popularly called soapstone. It is used as a dusting powder, and in some pill masses.

TALCUM PURIFICATUM.

Purified Talc.

Talcum purified by treatment with hydrochloric acid. Used in the pharmacopœial method of preparing certain official waters of volatile oils.

The same preparation is to be found in the National Formulary.

THYMOLIS IODIDUM.

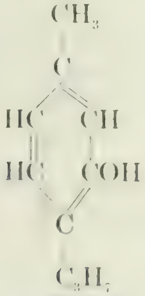
Thymol Iodide.

(*Aristol.*)

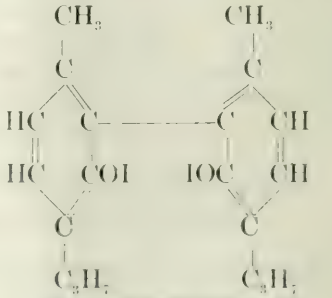
$(C_6H_2.CH_3.C_3H_7.OI)_2$

Official in the French Pharmacopœia as Diiodothymol. Variously known as *aristol*, *annidalin*, and *thymotol*.

Chemistry.—Chemically it is dithymol-diiodide. It is obtained by the condensation of two molecules of thymol (a methylisopropylphenol) and the introduction into its phenolic group of two atoms of iodine:



Thymol



Dithymol-diiodide (Thymolis Iodidum)

Character.—A bright, chocolate-colored or reddish-yellow, bulky powder, almost tasteless, and having a slight aromatic odor.

Solubility.—Insoluble in water and glycerin, soluble with difficulty in alcohol, readily soluble in fatty oils and in ether, vaseline, chloroform, and collodion.

It contains 46.14 per cent of iodine (Iodoform contains 96.7 per cent, Iodol 89 per cent of iodine).

Caution.—Keep in amber-colored bottles, protected from light.

Other thymol derivatives.—Many other derivatives or compounds of thymol have been suggested for therapeutic use, e. g., *thymotal* (thymol-carbonate), *thymacetin* (analogous to *phenacetin*), *thymoform* (condensation product of thymol and formaldehyde), *iodothymoform* (iodized *thymoform*), mercury compounds of thymol, *thymosalol*, etc.

TINCTURA GAMBIR COMPOSITA.

Compound Tincture of Gambir.

To replace Tinctura Catechu Composita (U. S. P., 1890). (See Gambir.)

Dose.—"Average dose: 4 Cc. (1 fluidrachm)." (U. S. P.)

TINCTURA LIMONIS CORTICIS.

Tincture of Lemon Peel.

Similar to the Tinctura Limonis (Br. P.), but twice as strong.

TROCHISCI GAMBIR.

Troches of Gambir.

To replace Trochisci Catechu (U. S. P., 1890).

UNGUENTUM ACIDI BORICI.

Ointment of Boric Acid.

A 10 per cent ointment made with Paraffin and White Petrolatum. Similar to the Unguentum Acidi Borici of the British and German Pharmacopœias.

UNGUENTUM HYDRARGYRI DILUTUM.

Blue Ointment.

This preparation contains 67 per cent of Unguentum Hydrargyri, which is called Mercurial Ointment. Heretofore "Blue Ointment" and "Mercurial Ointment" have been synonymous. Mercurial Ointment contains about 50 per cent of metallic mercury, while Blue Ointment contains about 33.5 per cent.

UNGUENTUM ZINCI STEARATIS.

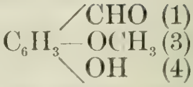
Ointment of Zinc Stearate.

An ointment containing 50 per cent of Zinc Stearate. The zinc present in the ointment is equivalent to about 7.5 or 8 per cent of zinc oxide.

VANILLINUM.

Vanillin.

$C_6H_3.OH.OCH_3.COH$ 4:3:1

Methyl ether of protocatechuic aldehyde  $C_6H_3\begin{cases}CHO\ (1)\\ OCH_3\ (3)\\ OH\ \ \ (4)\end{cases}$, occurring naturally in vanilla or made synthetically. Vanilla (U. S. P.) contains from 1 to 2 or 3 per cent of vanillin.

Eugenol, the principal constituent of oil of cloves, is allylmethyl pyrocatechol, and by oxidation yields vanillin, the allyl group being oxidized to the aldehyde group, (CHO), present in vanillin.

Character.—Colorless, prismatic needles, having the odor and taste of vanilla, and melting at 80° to 81° C.

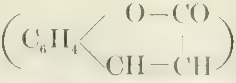
Solubility.—Soluble in cold water (about 1:100), in warm (1:15), easily soluble in alcohol, glycerin, ether, and chloroform.

Being a phenol in character, it readily dissolves in dilute alkali hydroxides, from which it is precipitated by acids. It is extracted completely from its solution in ether by shaking with a saturated aqueous solution of sodium bisulphite, from which it may be precipitated again by sulphuric acid.

Purity.—The Pharmacopœia guards against a possible adulteration with acetanilide by the following test: on warming 0.1 Gm. of Vanillin with concentrated alcoholic solution of sodium hydroxide, adding chloroform and again warming it should not give the disgusting odor of phenyl isocyanide; such an odor would indicate acetanilide.

Dose.—"Average dose: 0.030 Gm.=30 milligrammes (½ grain)." (U. S. P.)

Caution.—Keep in well-stoppered bottles, in a cool place, and protected from the light.

Coumarin ( $C_6H_4<\begin{array}{l}O-CO\\ \qquad\ \ |\\ CH-CH\end{array}$) the anhydride of orthocinnamic acid is an odoriferous principle found in the Tonka bean (1.5 per cent), and elsewhere, which resembles vanillin in odor. It forms colorless, shining prisms, melting at 67° C., and soluble in 400 parts cold, 45 parts of hot water, and in 7.5 parts of alcohol, easily soluble in ether.

"Extracts of vanilla" are sometimes found to be made not from the true vanilla bean, but to be alcoholic tinctures of synthetic vanillin or coumarin. Such sophistication can readily be detected, as follows: If some of the extract be freed from alcohol by evaporation, made up to its original volume with water and acidified with acetic acid, a reddish brown precipitate of resin will form in the case of a true extract; absence of such resin would indicate an artificial extract. The filtrate from this resin, in a true extract, should give a copious precipitate with basic lead acetate solution; an artificial gives none.

Distinction between vanillin and coumarin: an aqueous solution of vanillin is turned blue by a few drops of ferric chloride solution (U. S. P. test), coumarin is not. An aqueous solution of coumarin, unlike vanillin, forms a precipitate, when iodine in potassium iodide is added in excess, at first brown and flocculent, and afterwards, on shaking, forming a dark-green curdy clot.

A case has recently been reported in which vanillin was adulterated (to the extent of 50 per cent) with terpin hydrate; the adulteration was readily detected by the lack of a definite melting point.

VINUM COCÆ.

Wine of Coca.

An official wine prepared from the Fluidextract of Coca; it may well replace some of the commercial articles of this name.

Dose.—"Average dose: 16 Cc. (4 fluidrachms)." (U. S. P.)

This is practically the same preparation as the Vinum Erythroxyli, N. F.

ZINCI PHENOLSULPHONAS.

Zinc Phenolsulphonate.

$Zn(C_6H_4(OH \cdot SO_3)_2 + 8H_2O$

Commonly known as zinc sulphocarbolate; official in British Pharmacopœia as Zinci Sulphocarbolas. It should contain not less than 99.5 per cent of pure zinc paraphenolsulphonate. $(C_6H_4(OH)SO_3)_2Zn$ 1:4+ $8H_2O$.

Character.—Colorless, transparent, rhombic prisms, or tabular crystals, odorless, and having an astringent, metallic taste; effloresces on exposure and may become pink.

Solubility.—Easily soluble in water or alcohol. The aqueous solution is acid to litmus.

Dose.—"Average dose: 0.125 Gm. = 125 milligrammes (2 grains)." (U. S. P.)

Caution.—Keep in small, well-stoppered bottles.

ZINCI STEARAS.

Zinc Stearate.

Used in preparing Unguentum Zinci Stearatis.

CHANGES IN STRENGTH OF THE MORE IMPORTANT OFFICIAL PREPARATIONS.

(*a*) *Table of More Important Pharmacopœial Preparations, the Strength of which has been Increased.*

TITLE.	CHIEF CONSTITUENT.	PHARMACOPŒIA, 1890.	EIGHTH DECENNIAL REVISION.
Acidum Sulphuricum Aromaticum	H_2SO_4, by weight	About 18.5 per cent	About 20.0 per cent.
Alcohol	Absolute Alcohol, by weight	About 91.0 per cent	About 92.3 per cent.
Alcohol Dilutum	Absolute Alcohol, by weight	About 41.0 per cent	About 41.5 per cent.
Caffeina Citrata Effervescens	Citrated Caffeine, by weight	2.0 Gm. in 100 Gm	4.0 Gm. in 100 Gm.
Extractum Opii	Morphine (cryst.), by weight	18.0 per cent	20.0 per cent.
Liquor Ferri et Ammonii Acetatis	Tincture of Ferric Chloride	2 Cc. in 100 Cc	4 Cc. in 100 Cc.
Liquor Ferri Tersulphatis	$Fe_2(SO_4)_3$, by weight	28.7 per cent	36.0 per cent.
Mangani Dioxidum Præcipitatum[a]	Manganese Dioxide	At least 66.0 per cent	At least 80.0 per cent.
Oleatum Hydrargyri	Yellow Mercuric Oxide, by weight	20.0 per cent	25.0 per cent.
Tinctura Aurantii Dulcis	Sweet Orange Peel	1 Gm. in 5.0 Cc	1 Gm. in 2.0 Cc.
Tinctura Calumbæ	Calumba	1 Gm. in 10.0 Cc	1 Gm. in 5.0 Cc.
Tinctura Cantharidis	Cantharides	1 Gm. in 20.0 Cc	1 Gm. in 10.0 Cc.
Tinctura Capsici	Capsicum	1 Gm. in 20.0 Cc	1 Gm. in 10.0 Cc.
Tinctura Cardamomi	Cardamom	1 Gm. in 10.0 Cc	1 Gm. in 5.0 Cc.
Tinctura Cinnamomi	Saigon Cinnamon	1 Gm. in 10.0 Cc	1 Gm. in 5.0 Cc.
Tinctura Quassiæ	Quassia	1 Gm. in 10.0 Cc	1 Gm. in 5.0 Cc.
Tinctura Rhei	Rhubarb	1 Gm. in 10.0 Cc	1 Gm. in 5.0 Cc.
Tinctura Serpentariæ	Serpentaria	1 Gm. in 10.0 Cc	1 Gm. in 5.0 Cc.
Tinctura Strophanthi	Strophanthus	1 Gm. in 20.0 Cc	1 Gm. in 10.0 Cc.
Tinctura Tolutana	Balsam of Tolu	1 Gm. in 10.0 Cc	1 Gm. in 5.0 Cc.
Unguentum Chrysarobini	Chrysarobin, by weight	About 5.0 per cent	About 6.0 per cent.
Vinum Ergotæ	Fluidextract Ergot	1 Gm. in 6.67 Cc	1 Cc. Fluidextract Ergot in 5 Cc.

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[a] See page 46.

(*b*) *Table of More Important Pharmacopœial Preparations, the Strength of which has been Decreased.*

TITLE.	CHIEF CONSTITUENT.	PHARMACOPŒIA, 1890.	EIGHTH DECENNIAL REVISION.
Calx Chlorinata	Available Cl, by weight	At least 35.0 per cent	At least 30.0 per cent.
Jalap	Alcohol-soluble resin, by weight	12.0 per cent	At least 8.0 per cent.
	Ether-soluble resin, by weight	Not more than 1.2 per cent	Not more than 1.5 per cent.
Liquor Ferri Chloridi	Anhydrous $FeCl_3$, by weight	37.8 per cent	29.0 per cent.
Lithii Citras Effervescens	Lithium Citrate, by weight	About 17.0 per cent	About 5.0 per cent.
Opii Pulvis	Morphine (cryst.), by weight	13 to 15 per cent	12 to 12.5 per cent.
Opium Deodoratum	Morphine (cryst.), by weight	13 to 15 per cent	12 to 12.5 per cent.
Potassii Citras Effervescens	Potassium Citrate, by weight	About 48.0 per cent	About 20.0 per cent.
Spiritus Frumenti	Absolute Alcohol, by weight	44 to 50 per cent	37 to 47.5 per cent.
Suppositoria Glycerini	Glycerin, (half their former size)	6 Gm. each	3 Gm. each.
Syrupus Ferri Iodidi	Ferrous Iodide, by weight	About 10 per cent	About 5 per cent.
Tinctura Aconiti	Aconite	1 Gm. in 2.85 Cc	1 Gm. in 10.0 Cc.
Tinctura Belladonnæ Foliorum	Belladonna Leaves	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Benzoini Composita	Benzoin	1 Gm. in 8.33 Cc	1 Gm. in 10.0 Cc.
Tinctura Cannabis Indicæ	Indian Cannabis	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Colchici Seminis	Colchicum Seed	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Digitalis	Digitalis	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Ferri Chloridi	Anhydrous $FeCl_3$, by weight	13.6 per cent	13.28 per cent.
Tinctura Gambir Composita[a]	Gambir	1 Gm. in 10.0 Cc	1 Gm. in 20.0 Cc.
Tinctura Gelsemii	Gelsemium	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Hyoscyami	Hyoscyamus	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Kino	Kino	1 Gm. in 10.0 Cc	1 Gm. in 20.0 Cc.
Tinctura Lobeliæ	Lobelia	1 Gm. in 5.0 Cc	1 Gm. in 10.0 Cc.
Tinctura Opii	Morphine (cryst.), by weight	1.3 to 1.5 Gm. in 100 Cc	1.2 to 1.25 Gm. in 100 Cc.
Tinctura Opii Deodorata	Morphine (cryst.), by weight	1.3 to 1.5 Gm. in 100 Cc	1.2 to 1.25 Gm. in 100 Cc.
Tinctura Physostigmatis	Physostigma	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Sanguinariæ	Sanguinaria	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Scillæ	Squill	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.
Tinctura Stramonii	Stramonium	1 Gm. in 6.67 Cc	1 Gm. in 10.0 Cc.

[a] See Gambir, p. 37.

(*b*) ***Table of More Important Pharmacopœial Preparations, the Strength of which has been Decreased***—Continued.

TITLE.	CHIEF CONSTITUENT.	PHARMACOPŒIA, 1890.	EIGHTH DECENNIAL REVISION.
Tinctura Veratri	Veratrum	1 Gm. in 2.5 Cc	1 Gm. in 10.0 Cc.
Trochisci Cubebæ	Oleoresin of Cubeb, by weight	0.01 Gm. in each	0.02 Gm in each.
Unguentum Phenolis	Phenol, by weight	About 5.0 per cent	About 3.0 per cent.
Unguentum Sulphuris	Washed Sulphur, by weight	About 30.0 per cent	About 15.0 per cent.
Vinum Album	Absolute Alcohol, by weight	10.0 to 14.0 per cent	7.0 to 12.0 per cent.
Vinum Colchici Seminis	Fluidextract Colchicum Seed	1 Gm. Colchicum Seed in 6.67 Cc	1 Cc. Fluidextract Colchium Seed in 10.0 Cc.
Vinum Rubrum	Absolute Alcohol, by weight	10.0 to 14.0 per cent	7.0 to 12.0 per cent.

(*c*) *Table of More Important Pharmacopœial Preparations, for which a Standard has been Fixed, or made More Definite.*

TITLE.	CHIEF CONSTITUENT.	PHARMACOPŒIA, 1890.	EIGHTH DECENNIAL REVISION.
Aconitum	Aconitine, by weight	Standard not fixed	At least 0.5 per cent.
Belladonnæ Folia	Mydriatic alkaloids, by weight	Standard not fixed	At least 0.35 per cent.
Belladonnæ Radix	Mydriatic alkaloids, by weight	Standard not fixed	At least 0.5 per cent.
Cinchona	Alkaloids, by weight	At least 2.5 per cent Quinine	At least 4 per cent ether-soluble alkaloids.
Coca	Ether-soluble alkaloids, by weight	Standard not fixed	At least 0.5 per cent.
Colchici Cormus	Colchicine, by weight	Standard not fixed	At least 0.35 per cent.
Colchici Semen	Colchicine, by weight	Standard not fixed	At least 0.55 per cent.
Conium	Coniine, by weight	Standard not fixed	At least 0.5 per cent.
Emplastrum Belladonnæ	Mydriatic alkaloids, by weight	Standard not fixed	Not less than 0.38 per cent nor more than 0.42 per cent.
Extractum Belladonnæ	Mydriatic alkaloids, by weight	Standard not fixed	1.4 per cent.
Extractum Colchici Cormi	Colchicine, by weight	Standard not fixed	1.4 per cent.
Extractum Hyoscyami	Mydriatic alkaloids, by weight	Standard not fixed	0.3 per cent.
Extractum Nucis Vomicæ	Strychnine, by weight	15.0 per cent total alkaloids	5.0 per cent.
Extractum Physostigmatis	Ether-soluble alkaloids, by weight	Standard not fixed	2.0 per cent.
Extractum Stramonii	Mydriatic alkaloids, by weight	Standard not fixed	1.4 per cent.
Fluidextractum Aconiti	Aconitine, by weight	Standard not fixed	0.4 Gm. in 100 Cc.
Fluidextractum Belladonnæ Radicis	Mydriatic alkaloids, by weight	Standard not fixed	0.5 Gm. in 100 Cc.
Fluidextractum Cinchonæ	Anhydrous ether-soluble alkaloids, by weight	Standard not fixed	4.0 Gm. in 100 Cc.
Fluidextractum Cocæ	Ether-soluble alkaloids, by weight	Standard not fixed	0.5 Gm. in 100 Cc.
Fluidextractum Colchici Seminis	Colchicine, by weight	Standard not fixed	0.5 Gm. in 100 Cc.
Fluidextractum Conii	Coniine, by weight	Standard not fixed	0.45 Gm. in 100 Cc.
Fluidextractum Guaranæ	Alkaloids, by weight	Standard not fixed	3.5 Gm. in 100 Cc.
Fluidextractum Hydrastis	Hydrastine, by weight	Standard not fixed	2.0 Gm. in 100 Cc.
Fluidextractum Hyoscyami	Mydriatic alkaloids, by weight	Standard not fixed	0.075 Gm. in 100 Cc.
Fluidextractum Ipecacuanhæ	Alkaloids, by weight	Standard not fixed	1.75 Gm. in 100 Cc.
Fluidextractum Nucis Vomicæ	Strychnine, by weight	1.5 Gm. total alkaloids in 100 Cc.	1.0 Gm. in 100 Cc.
Fluidextractum Pilocarpi	Alkaloids, by weight	Standard not fixed	0.4 Gm. in 100 Cc.
Fluidextractum Stramonii	Mydriatic alkaloids, by weight	Standard not fixed	0.35 Gm. in 100 Cc.

(c) *Table of More Important Pharmacopœial Preparations, for which a Standard has been Fixed, etc.*—Continued.

TITLE.	CHIEF CONSTITUENT.	PHARMACOPŒIA, 1890.	EIGHTH DECENNIAL REVISION.
Guarana	Alkaloids, by weight	Standard not fixed	At least 3.5 per cent.
Hydrastis	Hydrastine, by weight	Standard not fixed	At least 2.5 per cent.
Hyoscyamus	Mydriatic alkaloids, by weight	Standard not fixed	At least 0.08 per cent.
Ipecacuanha	Alkaloids, by weight	Standard not fixed	At least 2.0 per cent.
Jalapa	Alcohol-soluble resin, by weight	12 per cent	At least 8.0 per cent.
	Ether soluble resin, by weight	Not more than 1.2 per cent	Not more than 1.5 per cent.
Nux Vomica	Strychnine, by weight	Standard not fixed	At least 1.25 per cent.
Oleum Amygdalæ Amaræ	Benzaldehyde, by weight	Standard not fixed	At least 85.0 per cent.
	Hydrocyanic Acid, by weight	Standard not fixed	2 to 4 per cent.
Oleum Cajuputi	Cineol, by volume	Standard not fixed	At least 55 per cent.
Oleum Caryophylli	Eugenol, by volume	Standard not fixed	At least 80 per cent.
Oleum Cinnamomi	Cinnamic Aldehyde, by volume	Standard not fixed	At least 75 per cent.
Oleum Eucalypti	Cineol, by volume	Standard not fixed	At least 50 per cent.
Oleum Limonis	Citral, by weight	Standard not fixed	At least 4 per cent.
Oleum Menthæ Piperitæ	Menthyl Acetate, by weight	Standard not fixed	At least 8 per cent.
	Total Menthol, by weight	Standard not fixed	At least 50 per cent.
Oleum Pimentæ	Eugenol, by volume	Standard not fixed	At least 65 per cent.
Oleum Rosmarini	Bornyl Acetate, by weight	Standard not fixed	At least 5 per cent.
	Total Borneol, by weight	Standard not fixed	At least 15 per cent.
Oleum Santali	Santalol, by weight	Standard not fixed	At least 90 per cent.
Oleum Thymi	Phenols, by volume	Standard not fixed	At least 20 per cent.
Pancreatinum		Standard not fixed	1 part digests at least 25 parts of starch.
Physostigma	Ether-soluble alkaloids, by weight	Standard not fixed	At least 0.15 per cent.
Pilocarpus	Alkaloids, by weight	Standard not fixed	At least 0.5 per cent.
Stramonium	Mydriatic alkaloids, by weight	Standard not fixed	At least 0.35 per cent.
Tinctura Aconiti	Aconitine, by weight	Standard not fixed	0.045 Gm. in 100 Cc.
Tinctura Belladonnæ Foliorum	Mydriatic alkaloids, by weight	Standard not fixed	0.035 Gm. in 100 Cc.
Tinctura Colchici Seminis	Colchicine, by weight	Standard not fixed	0.05 Gm. in 100 Cc.
Tinctura Hydrastis	Hydrastine, by weight	Standard not fixed	0.4 Gm. in 100 Cc.
Tinctura Hyoscyami	Mydriatic alkaloids, by weight	Standard not fixed	0.007 Gm. in 100 Cc.
Tinctura Nucis Vomicæ	Strychnine, by weight	0.3 Gm. total alkaloids in 100 Cc.	0.1 Gm. Strychnine in 100 Cc.
Tinctura Physostigmatis	Ether-soluble alkaloids, by weight	Standard not fixed	0.014 Gm. in 100 Cc.

CHANGES IN OFFICIAL LATIN TITLES OF PHARMACOPŒIAL PREPARATIONS.

Pharmacopœia, 1890.	Pharmacopœia, Eighth Revision.
Acidum Arsenosum	Arseni Trioxidum.
Acidum Carbolicum	Phenol.
Acidum Chromicum	Chromii Trioxidum.
Aloe Barbadensis	Aloe.
Aloe Socotrina	Aloe.
Alumini Hydras	Alumini Hydroxidum.
Ammonii Valerianas	Ammonii Valeras.
Amyl Nitris	Amylis Nitris.
Apomorphinæ Hydrochloras	Apomorphinæ Hydrochloridum.
Aqua Chlori	Liquor Chlori Compositus.
Argenti Nitras Dilutus	Argenti Nitras Mitigatus.
Arnicæ Flores	Arnica.
Calx Chlorata	Calx Chlorinata.
Chloral	Chloralum Hydratum.
Cocainæ Hydrochloras	Cocainæ Hydrochloridum.
Colchici Radix	Colchici Cormus.
Emplastrum Resinæ	Emplastrum Adhæsivum.
Extractum Aconiti Fluidum	Fluidextractum Aconiti.
Extractum Apocyni Fluidum	Fluidextractum Apocyni.
Extractum Aromaticum Fluidum	Fluidextractum Aromaticum.
Extractum Aurantii Amari	Fluidextractum Aurantii Amari.
Extractum Belladonnæ Foliorum Alcoholicum	Extractum Belladonnæ Foliorum.
Extractum Belladonnæ Radicis Fluidum	Fluidextractum Belladonnæ Radicis.
Extractum Buchu Fluidum	Fluidextractum Buchu.
Extractum Calami Fluidum	Fluidextractum Calami.
Extractum Calumbæ Fluidum	Fluidextractum Calumbæ.
Extractum Cannabis Indicæ Fluidum	Fluidextractum Cannabis Indicæ.
Extractum Capsici Fluidum	Fluidextractum Capsici.
Extractum Chimaphilæ Fluidum	Fluidextractum Chimaphilæ.
Extractum Chiratæ Fluidum	Fluidextractum Chiratæ.
Extractum Cimicifugæ Fluidum	Fluidextractum Cimicifugæ.
Extractum Cinchonæ Fluidum	Fluidextractum Cinchonæ.
Extractum Cocæ Fluidum	Fluidextractum Cocæ.
Extractum Colchici Radicis	Extractum Colchici Cormi.
Extractum Colchici Seminis Fluidum	Fluidextractum Colchici Seminis.
Extractum Conii Fluidum	Fluidextractum Conii.
Extractum Convallariæ Fluidum	Fluidextractum Convallariæ.
Extractum Cubebæ Fluidum	Fluidextractum Cubebæ.
Extractum Cypripedii Fluidum	Fluidextractum Cypripedii.
Extractum Digitalis Fluidum	Fluidextractum Digitalis.
Extractum Ergotæ Fluidum	Fluidextractum Ergotæ.
Extractum Eriodictyi Fluidum	Fluidextractum Eriodictyi.
Extractum Eucalypti Fluidum	Fluidextractum Eucalypti.
Extractum Eupatorii Fluidum	Fluidextractum Eupatorii.
Extractum Frangulæ Fluidum	Fluidextractum Frangulæ.
Extractum Gelsemii Fluidum	Fluidextractum Gelsemii.

Changes in official Latin titles of pharmacopœial preparations—Continued.

Pharmacopœia, 1890.	Pharmacopœia, Eighth Revision.
Extractum Gentianæ Fluidum	Fluidextractum Gentianæ.
Extractum Geranii Fluidum	Fluidextractum Geranii.
Extractum Glycyrrhizæ Fluidum	Fluidextractum Glycyrrhizæ.
Extractum Grindeliæ Fluidum	Fluidextractum Grindeliæ.
Extractum Guaranæ Fluidum	Fluidextractum Guaranæ.
Extractum Hamamelidis Fluidum	Fluidextractum Hamamelidis Foliorum.
Extractum Hydrastis Fluidum	Fluidextractum Hydrastis.
Extractum Hyoscyami Fluidum	Fluidextractum Hyoscyami.
Extractum Ipecacuanhæ Fluidum	Fluidextractum Ipecacuanhæ.
Extractum Krameriæ Fluidum	Fluidextractum Krameriæ.
Extractum Lappæ Fluidum	Fluidextractum Lappæ.
Extractum Leptandræ Fluidum	Fluidextractum Leptandræ.
Extractum Lobeliæ Fluidum	Fluidextractum Lobeliæ.
Extractum Lupulini Fluidum	Fluidextractum Lupulini.
Extractum Matico Fluidum	Fluidextractum Matico.
Extractum Mezerei Fluidum	Fluidextractum Mezerei.
Extractum Nucis Vomicæ Fluidum	Fluidextractum Nucis Vomicæ.
Extractum Pareiræ Fluidum	Fluidextractum Pareiræ.
Extractum Phytolaccæ Radicis Fluidum	Fluidextractum Phytolaccæ.
Extractum Pilocarpi Fluidum	Fluidextractum Pilocarpi.
Extractum Podophylli Fluidum	Fluidextractum Podophylli.
Extractum Pruni Virginianæ Fluidum	Fluidextractum Pruni Virginianæ.
Extractum Quassiæ Fluidum	Fluidextractum Quassiæ.
Extractum Rhamni Purshianæ Fluidum	Fluidextractum Rhamni Purshianæ.
Extractum Rhei Fluidum	Fluidextractum Rhei.
Extractum Rhois Glabræ Fluidum	Fluidextractum Rhois Glabræ.
Extractum Rosæ Fluidum	Fluidextractum Rosæ.
Extractum Rubi Fluidum	Fluidextractum Rubi.
Extractum Sabinæ Fluidum	Fluidextractum Sabinæ.
Extractum Sanguinariæ Fluidum	Fluidextractum Sanguinariæ.
Extractum Sarsaparillæ Fluidum	Fluidextractum Sarsaparillæ.
Extractum Sarsaparillæ Fluidum Compositum	Fluidextractum Sarsaparillæ Compositum.
Extractum Scillæ Fluidum	Fluidextractum Scillæ.
Extractum Scutellariæ Fluidum	Fluidextractum Scutellariæ.
Extractum Senegæ Fluidum	Fluidextractum Senegæ.
Extractum Sennæ Fluidum	Fluidextractum Sennæ.
Extractum Serpentariæ Fluidum	Fluidextractum Serpentariæ.
Extractum Spigeliæ Fluidum	Fluidextractum Spigeliæ.
Extractum Stillingiæ Fluidum	Fluidextractum Stillingiæ.
Extractum Taraxaci Fluidum	Fluidextractum Taraxaci.
Extractum Tritici Fluidum	Fluidextractum Tritici.
Extractum Uvæ Ursi Fluidum	Fluidextractum Uvæ Ursi.
Extractum Valerianæ Fluidum	Fluidextractum Valerianæ.
Extractum Veratri Viridis Fluidum	Fluidextractum Veratri.
Extractum Viburni Opuli Fluidum	Fluidextractum Viburni Opuli.
Extractum Viburni Prunifolii Fluidum	Fluidextractum Viburni Prunifolii.
Extractum Xanthoxyli Fluidum	Fluidextractum Xanthoxyli.
Extractum Zingiberis Fluidum	Fluidextractum Zingiberis.
Ferri Oxidum Hydratum	Ferri Hydroxidum.
Ferri Oxidum Hydratum cum Magnesia	Ferri Hydroxidum cum Magnesii Oxido.
Glyceritum Acidi Carbolici	Glyceritum Phenolis.
Gossypii Radicis Cortex	Gossypii Cortex.
Guaiaci Resina	Guaiacum.
Hamamelis	Hamamelidis Folia.
Hydrastininæ Hydrochloras	Hydrastininæ Hydrochloridum.

Changes in official Latin titles of pharmacopœial preparations—Continued.

Pharmacopœia, 1890.	Pharmacopœia, Eighth Revision.
Hyoscinæ Hydrobromas	Hyoscinæ Hydrobromidum.
Hyoscyaminæ Hydrobromas	Hyoscyaminæ Hydrobromidum.
Liquor Potassæ	Liquor Potassii Hydroxidi.
Liquor Sodæ	Liquor Sodii Hydroxidi.
Liquor Sodæ Chloratæ	Liquor Sodæ Chlorinatæ.
Magnesia	Magnesii Oxidum.
Magnesia Ponderosa	Magnesii Oxidum Ponderosum.
Mangani Dioxidum	Mangani Dioxidum Præcipitatum.
Mel Despumatum	Mel Depuratum.
Methyl Salicylas	Methylis Salicylas.
Morphinæ Hydrochloras	Morphinæ Hydrochloridum.
Naphtalinum	Naphthalenum.
Naphtol	Betanaphthol.
Oleum Betulæ Volatile	Oleum Betulæ.
Petrolatum Molle	Petrolatum.
Petrolatum Spissum	Petrolatum.
Phytolaccæ Radix	Phytolacca.
Pilocarpinæ Hydrochloras	Pilocarpinæ Hydrochloridum.
Potassa	Potassii Hydroxidum.
Potassi Bichromas	Potassii Dichromas.
Quercus Alba	Quercus.
Quininæ Hydrobromas	Quininæ Hydrobromidum.
Quininæ Hydrochloras	Quininæ Hydrochloridum.
Resorcinum	Resorcinol.
Salol	Phenylis Salicylas.
Sevum	Sevum Preparatum.
Soda	Sodii Hydroxidum.
Sodii Hyposulphis	Sodii Thiosulphas.
Sodii Sulphocarbolas	Sodii Phenolsulphonas.
Spiritus Glonoini	Spiritus Glycerylis Nitratis.
Stramonii Folia	Stramonium.
Tinctura Arnicæ Florum	Tinctura Arnicæ.
Tinctura Stramonii Seminis	Tinctura Stramonii.
Tinctura Veratri Viridis	Tinctura Veratri.
Unguentum Acidi Carbolici	Unguentum Phenolis
Veratrum Viride	Veratrum.
Vinum Ferri Citratis	Vinum Ferri.
Zinci Valerianas	Zinci Valeras.

ARTICLES DISMISSED FROM THE PHARMACOPŒIA.

Absinthium.
Acidum Carbolicum Crudum.
Alcohol Deodoratum.[1]
Allium.
Ammoniacum.
Ammonii Nitras.
Antimonii Oxidum.
Antimonii Sulphidum.
Antimonii Sulphidum Purificatum.
Antimonium Sulphuratum.
Argenti Iodidum.
Arnicæ Radix.[2]
Asclepias.
Aspidosperma.
Barii Dioxidum.[3]
Bryonia.
Cascarilla.
Castanea.
Catechu.[4]
Caulophyllum.
Ceratum Cetacei.
Cetraria.
Charta Potassii Nitratis.
Chelidonium.
Chenopodium.
Cinchonina.[5]
Cinnamomum Cassia.[6]
Crocus.
Decoctum Cetrariæ.
Decoctum Sarsaparillæ Compositum.
Dulcamara.
Elixir Phosphori.[7]
Emplastrum Ammoniaci cum Hydrargyro.
Emplastrum Arnicæ.
Emplastrum Ferri.
Emplastrum Ichthyocollæ.
Emplastrum Picis Burgundicæ.
Emplastrum Picis Cantharidatum.
Emplastrum Resinæ.[8]
Emulsum Ammoniaci.
Extractum Aconiti.[9]
Extractum Arnicæ Radicis.
Extractum Arnicæ Radicis Fluidum.
Extractum Asclepiadis Fluidum.
Extractum Aspidospermatis Fluidum.
Extractum Castaneæ Fluidum.
Extractum Cinchonæ.
Extractum Colchici Radicis Fluidum.[10]
Extractum Conii.
Extractum Cusso Fluidum.
Extractum Dulcamaræ Fluidum.
Extractum Gossypii Radicis Fluidum.[11]
Extractum Iridis.
Extractum Iridis Fluidum.
Extractum Jalapæ.
Extractum Juglandis.
Extractum Lobeliæ Fluidum (hydro-alcoholic menstruum).[12]
Extractum Menispermi Fluidum.
Extractum Podophylli.
Extractum Rumicis Fluidum.
Extractum Sanguinariæ Fluidum (hydro-alcoholic menstruum).[12]
Extractum Scillæ Fluidum (hydro-alcoholic menstruum).[12]
Extractum Scoparii Fluidum.
Extractum Stramonii Seminis.[13]
Extractum Stramonii Seminis Fluidum.
Extractum Uvæ Ursi.
Ferri Iodidum Saccharatum.
Ferri Lactas.
Ferri Valerianas.
Glyceritum Vitelli.
Guaiaci Lignum.
Hydrargyri Cyanidum.
Hydrargyri Subsulphas Flavus.
Ichthyocolla.
Illicium.
Infusum Cinchonæ.
Inula.
Iris.
Juglans.
Kamala.
Linimentum Sinapis Compositum.
Liquor Ferri Acetatis.
Liquor Ferri Citratis.
Liquor Ferri Nitratis.
Liquor Sodii Silicatis.
Macis.
Magnesii Citras Effervescens.[14]
Massa Copaibæ.
Melissa.
Menispermum.
Oleatum Zinci.[15]
Oleum Aurantii Florum.[16]
Oleum Bergamottæ.
Oleum Myrciæ.
Oleum Phosphoratum.
Oleum Sesami.
Pepsinum Saccharatum.
Phytolaccæ Fructus.[17]
Picrotoxinum.
Pilulæ Aloes et Asafœtidæ.
Pilulæ Antimonii Compositæ.
Pilulæ Rhei.
Pix Burgundica.
Plumbi Carbonas.
Potassa cum Calce.
Potassa Sulphurata.
Pulsatilla.

Pulvis Antimonialis.
Quinidinæ Sulphas.
Quininæ Valerianas.
Resina Copaibæ.
Rhus Toxicodendron.
Rosa Centifolia.
Rubus Idæus.
Rumex.
Sambucus.
Sodii Carbonas.[18]
Sodii Carbonas Exsiccatus.[18]
Spiritus Aurantii.
Spiritus Limonis.[19]
Spiritus Myrciæ.
Spiritus Myristicæ.
Spiritus Phosphori.
Stramonii Semen.[13]
Strontii Lactas.
Syrupus Allii.
Syrupus Althææ.
Syrupus Hypophosphitum cum Ferro.[20]
Syrupus Rubi Idæi.
Tabacum.
Tanacetum.
Tinctura Arnicæ Radicis.
Tinctura Bryoniæ.
Tinctura Catechu Composita.[21]
Tinctura Chiratæ.
Tinctura Croci.
Tinctura Cubebæ.
Tinctura Humuli.
Tinctura Matico.
Tinctura Rhei Dulcis.
Tinctura Stramonii Seminis.[13]
Tinctura Sumbul.[22]
Trochisci Catechu.[23]
Trochisci Cretæ.
Trochisci Ferri.
Trochisci Ipecacuanhæ.
Trochisci Menthæ Piperitæ.
Trochisci Morphinæ et Ipecacuanhæ.
Trochisci Zingiberis.
Unguentum Plumbi Carbonatis.
Unguentum Plumbi Iodidi.
Unguentum Stramonii (seed).[24]
Vinum Colchici Radicis.[25]
Vitellus.
Zinci Phosphidum.

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[1] The standard of Alcohol in the Eighth Revision has been raised, making it about equivalent to Alcohol Deodoratum (U. S. P., 1890).

[2] Arnicæ Flores (U. S. P., 1890) becomes Arnica in the present revision.

[3] Never used in medicine; heretofore only in the preparation of Aqua Hydrogenii Dioxidi.

[4] Replaced by Gambir.

[5] Cinchoninæ Sulphas is retained.

[6] Saigon and Ceylon are retained, and Cinnamic Aldehyde, the most important constituent of Cinnamon, has been introduced.

[7] The Pills of Phosphorus are retained.

[8] Replaced by Emplastrum Adhæsivum.

[9] Alkaloid Aconitine introduced.

[10] Fluidextractum Colchici Seminis is retained, and Colchicine is introduced.

[11] Gossypii Radicis Cortex (1890) = Gossypii Cortex, Eighth Revision.

[12] The new Fluidextractum is a hydro-acetic acid extract.

[13] Stramonii Folia (1890) = Stramonium, Eighth Revision, of which there are an extract, a fluidextract and a tincture. The present extract is made from the fluidextract.

[14] See Magnesii Sulphas Effervescens, page 45.

[15] See Zinci Stearas, page 61.

[16] Oleum Aurantii Corticis is retained.

[17] Phytolaccæ Radix (1890) = Phytolacca, Eighth Revision.

[18] See Sodii Carbonas Monohydratus, page 53.

[19] Tinctura Limonis is introduced.

[20] See Syrupus Hypophosphitum Compositus, page 57.

[21] Replaced by Tinctura Gambir Composita.

[22] Fluidextractum Sumbul is introduced.

[23] Replaced by Trochisci Gambir.

[24] Made from Extractum Stramonii, Eighth Revision.

[25] Vinum Colchici Seminis is retained.

TABLE OF AVERAGE DOSES, AS GIVEN BY THE U. S. PHARMACOPŒIA, EIGHTH DECENNIAL REVISION.

The Pharmacopœial Convention of 1900 instructed the Committee of Revision "to state the average approximate (but neither a maximum nor a minimum) dose for adults, * * * the metric system to be used, and the approximate equivalent ordinary weights or measures inserted in parentheses," and the Committee was further directed to make the following distinct declaration: "That neither this Convention, nor the Committee of Revision created by it, intends to have these doses regarded as obligatory on the physician or as forbidding him to exceed them whenever in his judgment this seems advisable."

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	**Approximate Equivalent Ordinary System.**
Acetanilidum	0. 250 Gm. = 250 milligrammes.	4 grains.
Acetphenetidinum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Acetum Opii	0. 5 Cc.	8 minims.
Acetum Scillæ	1 Cc.	15 minims.
Acidum Aceticum Dilutum	2 Cc.	30 minims.
Acidum Benzoicum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Acidum Boricum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Acidum Camphoricum	1 Gm.	15 grains.
Acidum Citricum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Acidum Gallicum	1 Gm.	15 grains.
Acidum Hydriodicum Dilutum	0. 5 Cc.	8 minims.
Acidum Hydrobromicum Dilutum	4 Cc.	1 fluidrachm.
Acidum Hydrochloricum Dilutum	1 Cc.	15 minims.
Acidum Hydrocyanicum Dilutum	0. 1 Cc.	1½ minims.
Acidum Hypophosphorosum Dilutum	0. 5 Cc.	8 minims.
Acidum Lacticum	2 Cc.	30 minims.
Acidum Nitricum Dilutum	2 Cc.	30 minims.
Acidum Nitrohydrochloricum	0. 2 Cc.	3 minims.
Acidum Nitrohydrochloricum Dilutum	1 Cc.	15 minims.
Acidum Phosphoricum Dilutum	2 Cc.	30 minims.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Acidum Salicylicum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Acidum Sulphuricum Aromaticum	1 Cc.	15 minims.
Acidum Sulphuricum Dilutum	2 Cc.	30 minims.
Acidum Sulphurosum	2 Cc.	30 minims.
Acidum Tannicum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Acidum Tartaricum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Aconitina	0. 00015 Gm. = 0.15 milligramme.	$\frac{1}{400}$ grain.
Aconitum	0. 065 Gm. = 65 milligrammes.	1 grain.
Æther	1 Cc.	15 minims.
Æther Aceticus	1 Cc.	15 minims.
Æthylis Carbamas	1 Gm.	15 grains.
Aloe	0. 250 Gm. = 250 milligrammes.	4 grains.
Aloe Purificata	0. 250 Gm. = 250 milligrammes.	4 grains.
Aloinum	0. 065 Gm. = 65 milligrammes.	1 grain.
Alumen	0. 500 Gm. = 500 milligrammes.	7½ grains.
Ammonii Benzoas	1 Gm.	15 grains.
Ammonii Bromidum	1 Gm.	15 grains.
Ammonii Carbonas	0. 250 Gm. = 250 milligrammes.	4 grains.
Ammonii Chloridum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Ammonii Iodidum	0. 250 Gm. = 250 milligrammes.	4 grains.

Ammonii Salicylas		0. 250 Gm. = 250 milligrammes.	4 grains.
Ammonii Valeras		0. 500 Gm. = 500 milligrammes.	7½ grains.
Amylis Nitris		0. 2 Cc.	3 minims.
Anisum		0. 500 Gm. = 500 milligrammes.	7½ grains.
Anthemis		2 Gm.	30 grains.
Antimonii et Potassii Tartras	Expectorant	0. 005 Gm. = 5 milligrammes.	$\frac{1}{10}$ grain.
	Emetic	0. 030 Gm. = 30 milligrammes.	½ grain.
Antipyrina		0. 250 Gm. = 250 milligrammes.	4 grains.
Apocynum		1 Gm.	15 grains.
Apomorphinæ Hydrochloridum	Expectorant	0. 002 Gm. = 2 milligrammes.	$\frac{1}{30}$ grain.
	Emetic	0. 005 Gm. = 5 milligrammes.	$\frac{1}{10}$ grain.
Aqua Ammoniæ		1 Cc.	15 minims.
Aqua Amygdalæ Amaræ		4 Cc.	1 fluidrachm.
Aqua Anisi		16 Cc.	4 fluidrachms.
Aqua Aurantii Florum		16 Cc.	4 fluidrachms.
Aqua Aurantii Florum Fortior		8 Cc.	2 fluidrachms.
Aqua Camphoræ		8 Cc.	2 fluidrachms.
Aqua Chloroformi		16 Cc.	4 fluidrachms.
Aqua Cinnamomi		16 Cc.	4 fluidrachms.
Aqua Creosoti		8 Cc.	2 fluidrachms.
Aqua Fœniculi		16 Cc.	4 fluidrachms.
Aqua Hamamelidis		8 Cc.	2 fluidrachms.
Aqua Hydrogenii Dioxidi		4 Cc.	1 fluidrachm.
Aqua Menthæ Piperitæ		16 Cc.	4 fluidrachms.
Aqua Menthæ Viridis		16 Cc.	4 fluidrachms.
Aqua Rosæ		16 Cc.	4 fluidrachms.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Aqua Rosæ Fortior	8 Cc.	2 fluidrachms.
Argenti Nitras	0. 010 Gm. = 10 milligrammes.	$\frac{1}{5}$ grain.
Argenti Oxidum	0. 065 Gm. = 65 milligrammes.	1 grain.
Arnica	1 Gm.	15 grains.
Arseni Iodidum	0. 005 Gm. = 5 milligrammes.	$\frac{1}{10}$ grain.
Arseni Trioxidum	0. 002 Gm. = 2 milligrammes.	$\frac{1}{30}$ grain.
Asafœtida	0. 250 Gm. = 250 milligrammes.	4 grains.
Aspidium	4 Gm.	60 grains.
Atropina	0. 0004 Gm. = 0. 4 milligramme.	$\frac{1}{160}$ grain.
Atropinæ Sulphas	0. 0004 Gm. = 0. 4 milligramme.	$\frac{1}{160}$ grain.
Aurantii Amari Cortex	1 Gm.	15 grains.
Aurantii Dulcis Cortex	1 Gm.	15 grains.
Auri et Sodii Chloridum	0. 005 Gm. = 5 milligrammes.	$\frac{1}{10}$ grain.
Balsamum Peruvianum	1 Gm.	15 grains.
Balsamum Tolutanum	1 Gm.	15 grains.
Belladonnæ Folia	0. 065 Gm. = 65 milligrammes.	1 grain.
Belladonnæ Radix	0. 045 Gm. = 45 milligrammes.	$\frac{3}{4}$ grain.
Benzaldehydum	0. 03 Cc.	$\frac{1}{2}$ minim.
Benzoinum	1 Gm.	15 grains.
Benzosulphinidum	0. 200 Gm. = 200 milligrammes.	3 grains.

Berberis	2 Gm.	30 grains.
Betanaphthol	0. 250 Gm. = 250 milligrammes.	4 grains.
Bismuthi Citras	0. 125 Gm. = 125 milligrammes.	2 grains.
Bismuthi et Ammonii Citras	0. 125 Gm. = 125 milligrammes.	2 grains.
Bismuthi Subcarbonas	0. 500 Gm. = 500 milligrammes.	7½ grains.
Bismuthi Subgallas	0. 250 Gm. = 250 milligrammes.	4 grains.
Bismuthi Subnitras	0. 500 Gm. = 500 milligrammes.	7½ grains.
Bismuthi Subsalicylas	0. 250 Gm. = 250 milligrammes.	4 grains.
Bromoformum	0. 2 Cc.	3 minims.
Buchu	2 Gm.	30 grains.
Caffeina	0. 065 Gm. = 65 milligrammes.	1 grain.
Caffeina Citrata	0. 125 Gm. = 125 milligrammes.	2 grains.
Caffeina Citrata Effervescens	4 Gm.	60 grains.
Calamus	1 Gm.	15 grains.
Calcii Bromidum	1 Gm.	15 grains.
Calcii Carbonas Praecipitatus	1 Gm.	15 grains.
Calcii Chloridum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Calcii Hypophosphis	0. 500 Gm. = 500 milligrammes.	7½ grains.
Calcii Phosphas Praecipitatus	1 Gm.	15 grains.
Calendula	1 Gm.	15 grains.
Calumba	2 Gm.	30 grains.
Calx Chlorinata	0. 250 Gm. = 250 milligrammes.	4 grains.
Calx Sulphurata	0. 065 Gm. = 65 milligrammes.	1 grain.
Cambogia	0. 125 Gm. = 125 milligrammes.	2 grains.
Camphora	0. 125 Gm. = 125 milligrammes.	2 grains.
Camphora Monobromata	0. 125 Gm. = 125 milligrammes.	2 grains.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Cannabis Indica	0. 065 Gm. = 65 milligrammes.	1 grain.
Cantharis	0. 030 Gm. = 30 milligrammes.	½ grain.
Capsicum	0. 065 Gm. = 65 milligrammes.	1 grain.
Carbo Ligni	1 Gm.	15 grains.
Cardamomum	1 Gm.	15 grains.
Carum	1 Gm.	15 grains.
Caryophyllus	0. 250 Gm. = 250 milligrammes.	4 grains.
Cassia Fistula	4 Gm.	60 grains.
Cerii Oxalas	0. 065 Gm. = 65 milligrammes.	1 grain.
Chimaphila	2 Gm.	30 grains.
Chirata	1 Gm.	15 grains.
Chloralformamidum	1 Gm.	15 grains.
Chloralum Hydratum	1 Gm.	15 grains.
Chloroformum	0. 3 Cc.	5 minims.
Chondrus. In decoction	15 Gm.	4 drachms.
Chrysarobinum	0. 030 Gm. = 30 milligrammes.	½ grain.
Cimicifuga	1 Gm.	15 grains.
Cinchona	1 Gm.	15 grains.
Cinchona Rubra	1 Gm.	15 grains.
Cinchonidinæ Sulphas	0. 250 Gm. = 250 milligrammes.	4 grains.

Cinchoninæ Sulphas		0. 250 Gm. = 250 milligrammes.	4 grains.
Cinnaldehydum		0. 05 Cc.	1 minim.
Cinnamomum Saigonicum		0. 250 Gm. = 250 milligrammes.	4 grains.
Cinnamomum Zeylanicum		0. 250 Gm. = 250 milligrammes.	4 grains.
Coca		2 Gm.	30 grains.
Cocaina		0. 030 Gm. = 30 milligrammes.	½ grain.
Cocainæ Hydrochloridum		0. 030 Gm. = 30 milligrammes.	½ grain.
Codeina		0. 030 Gm. = 30 milligrammes.	½ grain.
Codeinæ Phosphas		0. 030 Gm. = 30 milligrammes.	½ grain.
Codeinæ Sulphas		0. 030 Gm. = 30 milligrammes.	½ grain.
Colchici Cormus		0. 250 Gm. = 250 milligrammes.	4 grains.
Colchici Semen		0. 200 Gm. = 200 milligrammes.	3 grains.
Colchicina		0. 0005 Gm. = 0.5 milligrammes.	$\frac{1}{128}$ grain.
Colocynthis		0. 065 Gm. = 65 milligrammes.	1 grain.
Confectio Sennæ		4 Gm.	60 grains.
Conium		0. 200 Gm. = 200 milligrammes.	3 grains.
Convallaria		0. 500 Gm. = 500 milligrammes.	7½ grains.
Copaiba		1 Cc.	15 minims.
Coriandrum		0. 500 Gm. = 500 milligrammes.	7½ grains.
Creosotum		0. 2 Cc.	3 minims.
Cresol		0. 05 Cc.	1 minim.
Creta Præparata		1 Gm.	15 grains.
Cubeba		1 Gm.	15 grains.
Cupri Sulphas	Astringent	0. 010 Gm. = 10 milligrammes.	$\frac{1}{6}$ grain.
	Emetic	0. 250 Gm. = 250 milligrammes.	4 grains.
Cusso		16 Gm.	240 grains.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Cypripedium	1 Gm.	15 grains.
Digitalis	0.065 Gm. = 65 milligrammes.	1 grain.
Elaterinum	0.005 Gm. = 5 milligrammes.	$\frac{1}{16}$ grain.
Elixir Ferri, Quininæ, et Strychninæ Phosphatum	4 Cc.	1 fluidrachm.
Emulsum Amygdalæ	120 Cc.	4 fluidounces.
Emulsum Asafœtidæ	16 Cc.	4 fluidrachms.
Emulsum Chloroformi	8 Cc.	2 fluidrachms.
Emulsum Olei Morrhuæ	8 Cc.	2 fluidrachms.
Emulsum Olei Morrhuæ cum Hypophosphitibus	8 Cc.	2 fluidrachms.
Emulsum Olei Terebinthinæ	4 Cc.	1 fluidrachm.
Ergota	2 Gm.	30 grains.
Eriodictyon	1 Gm.	15 grains.
Eucalyptol	0.3 Cc.	5 minims.
Eucalyptus	2 Gm.	30 grains.
Eugenol	0.2 Cc.	3 minims.
Euonymus	0.500 Gm. = 500 milligrammes.	$7\frac{1}{2}$ grains.
Eupatorium	2 Gm.	30 grains.
Extractum Aloes	0.125 Gm. = 125 milligrammes.	2 grains.
Extractum Belladonnæ Foliorum	0.010 Gm. = 10 milligrammes.	$\frac{1}{5}$ grain.
Extractum Cannabis Indicæ	0.010 Gm. = 10 milligrammes	$\frac{1}{5}$ grain.

Extractum Cimicifugæ	0. 250 Gm. = 250 milligrammes.	4 grains.
Extractum Colchici Cormi	0. 065 Gm. = 65 milligrammes.	1 grain.
Extractum Colocynthidis	0. 030 Gm. = 30 milligrammes.	½ grain.
Extractum Colocynthidis Compositum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Extractum Digitalis	0. 010 Gm. = 10 milligrammes.	⅕ grain.
Extractum Ergotæ	0. 250 Gm. = 250 milligrammes.	4 grains.
Extractum Euonymi	0. 125 Gm. = 125 milligrammes.	2 grains.
Extractum Gentianæ	0. 250 Gm. = 250 milligrammes.	4 grains.
Extractum Glycyrrhizæ	1 Gm.	15 grains.
Extractum Glycyrrhizæ Purum	1 Gm.	15 grains.
Extractum Hæmatoxyli	1 Gm.	15 grains.
Extractum Hyoscyami	0. 065 Gm. = 65 milligrammes.	1 grain.
Extractum Krameriæ	0. 500 Gm. = 500 milligrammes.	7½ grains.
Extractum Leptandræ	0. 250 Gm. = 250 milligrammes.	4 grains.
Extractum Malti	16 Cc.	4 fluidrachms.
Extractum Nucis Vomicæ	0. 015 Gm. = 15 milligrammes.	¼ grain.
Extractum Opii	0. 030 Gm. = 30 milligrammes.	½ grain.
Extractum Physostigmatis	0. 008 Gm. = 8 milligrammes.	⅛ grain.
Extractum Quassiæ	0. 065 Gm. = 65 milligrammes.	1 grain.
Extractum Rhamni Purshianæ	0. 250 Gm. = 250 milligrammes.	4 grains.
Extractum Rhei	0. 250 Gm. = 250 milligrammes.	4 grains.
Extractum Scopolæ	0. 010 Gm. = 10 milligrammes.	⅕ grain.
Extractum Stramonii	0. 010 Gm. = 10 milligrammes.	⅕ grain.
Extractum Sumbul	0. 250 Gm. = 250 milligrammes.	4 grains.
Extractum Taraxaci	1 Gm.	15 grains.
Fel Bovis Purificatum	0. 500 Gm. = 500 milligrammes.	7½ grains.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Ferri Carbonas Saccharatus	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri Chloridum	0. 065 Gm. = 65 milligrammes.	1 grain.
Ferri Citras	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri et Ammonii Citras	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri et Ammonii Sulphas	0. 500 Gm. = 500 milligrammes.	7½ grains.
Ferri et Ammonii Tartras	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri et Potassii Tartras	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri et Quininae Citras	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri et Quininae Citras Solubilis	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri et Strychninae Citras	0. 125 Gm. = 125 milligrammes.	2 grains.
Ferri Hydroxidum cum Magnesii Oxido ....Arsenical antidote	120 Cc.	4 fluidounces.
Ferri Hypophosphis	0. 200 Gm. = 200 milligrammes.	3 grains.
Ferri Phosphas Solubilis	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri Pyrophosphas Solubilis	0. 250 Gm. = 250 milligrammes.	4 grains.
Ferri Sulphas	0. 200 Gm. = 200 milligrammes.	3 grains.
Ferri Sulphas Exsiccatus	0. 125 Gm. = 125 milligrammes.	2 grains.
Ferri Sulphas Granulatus	0. 200 Gm. = 200 milligrammes.	3 grains.
Ferrum Reductum	0. 065 Gm. = 65 milligrammes.	1 grain.
Fluidextractum Aconiti	0. 05 Cc.	1 minim.
Fluidextractum Apocyni	1 Cc.	15 minims.

Fluidextractum Aromaticum	1 Cc.	15 minims.
Fluidextractum Aurantii Amari	1 Cc.	15 minims.
Fluidextractum Belladonnæ Radicis	0. 05 Cc.	1 minim.
Fluidextractum Berberidis	2 Cc.	30 minims.
Fluidextractum Buchu	2 Cc.	30 minims.
Fluidextractum Calami	1 Cc.	15 minims.
Fluidextractum Calumbæ	2 Cc.	30 minims.
Fluidextractum Cannabis Indicæ	0. 05 Cc.	1 minim.
Fluidextractum Capsici	0. 05 Cc.	1 minim.
Fluidextractum Chimaphilæ	2 Cc.	30 minims.
Fluidextractum Chiratæ	1 Cc.	15 minims.
Fluidextractum Cimicifugæ	1 Cc.	15 minims.
Fluidextractum Cinchonæ	1 Cc.	15 minims.
Fluidextractum Cocæ	2 Cc.	30 minims.
Fluidextractum Colchici Seminis	0. 2 Cc.	3 minims.
Fluidextractum Conii	0. 2 Cc.	3 minims.
Fluidextractum Convallariæ	0. 5 Cc.	8 minims.
Fluidextractum Cubebæ	1 Cc.	15 minims.
Fluidextractum Cypripedii	1 Cc.	15 minims.
Fluidextractum Digitalis	0. 05 Cc.	1 minim.
Fluidextractum Ergotæ	2 Cc.	30 minims.
Fluidextractum Eriodictyi	1 Cc.	15 minims.
Fluidextractum Eucalypti	2 Cc.	30 minims.
Fluidextractum Euonymi	0. 5 Cc.	8 minims.
Fluidextractum Eupatorii	2 Cc.	30 minims.
Fluidextractum Frangulæ	1 Cc	15 minims.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.		AVERAGE DOSE.	
		Metric System.	Approximate Equivalent Ordinary System.
Fluidextractum Gelsemii		0. 05 Cc.	1 minim.
Fluidextractum Gentianæ		1 Cc.	15 minims.
Fluidextractum Geranii		1 Cc.	15 minims.
Fluidextractum Glycyrrhizæ		2 Cc.	30 minims.
Fluidextractum Granati		2 Cc.	30 minims.
Fluidextractum Grindeliæ		2 Cc.	30 minims.
Fluidextractum Guaranæ		2 Cc.	30 minims.
Fluidextractum Hamamelidis Foliorum		2 Cc.	30 minims.
Fluidextractum Hydrastis		2 Cc.	30 minims.
Fluidextractum Hyoscyami		0. 2 Cc.	3 minims.
Fluidextractum Ipecacuanhæ	Emetic	1 Cc.	15 minims.
	Expectorant	0. 05 Cc.	1 minim.
Fluidextractum Krameriæ		1 Cc.	15 minims.
Fluidextractum Lappæ		2 Cc.	30 minims.
Fluidextractum Leptandræ		1 Cc.	15 minims.
Fluidextractum Lobeliæ		0. 5 Cc.	8 minims.
Fluidextractum Lupulini		0. 5 Cc.	8 minims.
Fluidextractum Matico		4 Cc.	1 fluidrachm.
Fluidextractum Nucis Vomicæ		0. 05 Cc.	1 minim.
Fluidextractum Pareiræ		2 Cc.	30 minims.

Fluidextractum Phytolaccæ	Emetic	1 Cc.	15 minims.
	Alterative	0. 1 Cc.	1½ minims.
Fluidextractum Pilocarpi		2 Cc.	30 minims.
Fluidextractum Podophylli		0. 5 Cc.	8 minims.
Fluidextractum Pruni Virginianæ		2 Cc.	30 minims.
Fluidextractum Quassiæ		0. 5 Cc.	8 minims.
Fluidextractum Quercus		1 Cc.	15 minims.
Fluidextractum Quillajæ		0. 2 Cc.	3 minims.
Fluidextractum Rhamni Purshianæ		1 Cc.	15 minims.
Fluidextractum Rhamni Purshianæ Aromaticum		1 Cc.	15 minims.
Fluidextractum Rhei		1 Cc.	15 minims.
Fluidextractum Rhois Glabræ		1 Cc.	15 minims.
Fluidextractum Rosæ		2 Cc.	30 minims.
Fluidextractum Rubi		1 Cc.	15 minims.
Fluidextractum Sabinæ		0. 3 Cc.	5 minims.
Fluidextractum Sanguinariæ		0. 1 Cc.	1½ minims.
Fluidextractum Sarsaparillæ		2 Cc.	30 minims.
Fluidextractum Sarsaparillæ Compositum		2 Cc.	30 minims.
Fluidextractum Scillæ		0. 1 Cc.	1½ minims.
Fluidextractum Scopolæ		0. 05 Cc.	1 minim.
Fluidextractum Scutellariæ		1 Cc.	15 minims.
Fluidextractum Senegæ		1 Cc.	15 minims.
Fluidextractum Sennæ		2 Cc.	30 minims.
Fluidextractum Serpentariæ		1 Cc.	15 minims.
Fluidextractum Spigeliæ		4 Cc.	1 fluidrachm.
Fluidextractum Staphisagriæ		0. 05 Cc.	1 minim.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Fluidextractum Stillingiæ	2 Cc.	30 minims.
Fluidextractum Stramonii	0. 05 Cc.	1 minim.
Fluidextractum Sumbul	2 Cc.	30 minims.
Fluidextractum Taraxaci	8 Cc.	2 fluidrachms.
Fluidextractum Tritici	8 Cc.	2 fluidrachms.
Fluidextractum Uvæ Ursi	2 Cc.	30 minims.
Fluidextractum Valerianæ	2 Cc.	30 minims.
Fluidextractum Veratri	0. 1 Cc.	1½ minims.
Fluidextractum Viburni Opuli	2 Cc.	30 minims.
Fluidextractum Viburni Prunifolii	2 Cc.	30 minims.
Fluidextractum Xanthoxyli	2 Cc.	30 minims.
Fluidextractum Zingiberis	1 Cc.	15 minims.
Fœniculum	1 Gm.	15 grains.
Frangula	1 Gm.	15 grains.
Galla	0. 500 Gm. = 500 milligrammes.	7½ grains.
Gambir	1 Gm.	15 grains.
Gelsemium	0. 065 Gm. = 65 milligrammes.	1 grain.
Gentiana	1 Gm.	15 grains.
Geranium	1 Gm.	15 grains.
Glandulæ Suprarenales Siccæ	0. 250 Gm. = 250 milligrammes.	4 grains.

Glandulæ Thyroideæ Siccæ	0. 250 Gm. = 250 milligrammes.	4 grains.
Glycerinum	4 Cc.	1 fluidrachm.
Glyceritum Acidi Tannici	2 Cc.	30 minims.
Glyceritum Ferri, Quininæ, et Strychinæ Phosphatum	1 Cc.	15 minims.
Glyceritum Hydrastis	2 Cc.	30 minims.
Glyceritum Phenolis	0. 3 Cc.	5 minims.
Glycyrrhiza	2 Gm.	30 grains.
Glycyrrhizinum Ammoniatum	0. 250 Gm. = 250 milligrammes.	4 grains.
Gossypii Cortex	2 Gm.	30 grains.
Granatum	2 Gm.	30 grains.
Grindelia	2 Gm.	30 grains.
Guaiacol	0. 5 Cc.	8 minims.
Guaiacolis Carbonas	1 Gm.	15 grains.
Guaiacum	1 Gm.	15 grains.
Guarana	2 Gm.	30 grains.
Hamamelidis Cortex	2 Gm.	30 grains.
Hamamelidis Folia	2 Gm.	30 grains.
Hedeoma	8 Gm.	120 grains.
Hexamethylenamina	0. 250 Gm. = 250 milligrammes.	4 grains.
Homatropinæ Hydrobromidum	0. 0005 Gm. = 0. 5 milligramme.	$\frac{1}{120}$ grain.
Humulus	2 Gm.	30 grains.
Hydrargyri Chloridum Corrosivum	0. 003 Gm. = 3 milligrammes.	$\frac{1}{20}$ grain.
Hydrargyri Chloridum Mite { Laxative	0. 125 Gm. = 125 milligrammes.	2 grains.
Hydrargyri Chloridum Mite { Alterative	0. 065 Gm. = 65 milligrammes.	1 grain.
Hydrargyri Iodidum Flavum	0. 010 Gm. = 10 milligrammes.	$\frac{1}{6}$ grain.
Hydrargyri Iodidum Rubrum	0. 003 Gm. = 3 milligrammes.	$\frac{1}{20}$ grain.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE,	
	Metric System.	Approximate Equivalent Ordinary System.
Hydrargyrum cum Creta	0. 250 Gm. = 250 milligrammes.	4 grains.
Hydrastina	0. 010 Gm. = 10 milligrammes.	$\frac{1}{6}$ grain.
Hydrastininæ Hydrochloridum	0. 030 Gm. = 30 milligrammes.	$\frac{1}{2}$ grain.
Hydrastis	2 Gm.	30 grains.
Hyoscinæ Hydrobromidum	0. 0005 Gm. = 0. 5 milligramme.	$\frac{1}{128}$ grain.
Hyoscyaminæ Hydrobromidum	0. 0005 Gm. = 0.5 milligramme.	$\frac{1}{128}$ grain.
Hyoscyaminæ Sulphas	0. 0005 Gm. = 0. 5 milligramme.	$\frac{1}{128}$ grain.
Hyoscyamus	0. 250 Gm. = 250 milligrammes.	4 grains.
Infusum Digitalis	8 Cc.	2 fluidrachms.
Infusum Pruni Virginianæ	60 Cc.	2 fluidounces.
Infusum Sennæ Compositum	120 Cc.	4 fluidounces.
Iodoformum	0. 250 Gm. = 250 milligrammes.	4 grains.
Iodolum	0. 250 Gm. = 250 milligrammes.	4 grains.
Iodum	0. 005 Gm. = 5 milligrammes.	$\frac{1}{10}$ grain.
Ipecacuanha { Expectorant	0. 065 Gm. = 65 milligrammes.	1 grain.
Ipecacuanha { Emetic	1 Gm.	15 grains.
Jalapa	1 Gm.	15 grains.
Kino	0. 500 Gm. = 500 milligrammes.	$7\frac{1}{2}$ grains.
Krameria	1 Gm.	15 grains.
Lactucarium	1 Gm.	15 grains.

Lappa	2 Gm.	30 grains.
Leptandra	1 Gm.	15 grains.
Limonis Succus	30 Cc.	1 fluidounce.
Liquor Acidi Arsenosi	0. 2 Cc.	3 minims.
Liquor Ammonii Acetatis	16 Cc.	4 fluidrachms.
Liquor Antisepticus	4 Cc.	1 fluidrachm.
Liquor Arseni et Hydrargyri Iodidi	0. 1 Cc.	1½ minims.
Liquor Calcis	16 Cc.	4 fluidrachms.
Liquor Chlori Compositus	4 Cc.	1 fluidrachm.
Liquor Ferri Chloridi	0. 1 Cc.	1½ minims.
Liquor Ferri et Ammonii Acetatis	16 Cc.	4 fluidrachms.
Liquor Ferri Subsulphatis	0. 2 Cc.	3 minims.
Liquor Iodi Compositus	0. 2 Cc.	3 minims.
Liquor Magnesii Citratis	360 Cc.	12 fluidounces.
Liquor Potassii Arsenitis	0. 2 Cc.	3 minims.
Liquor Potassii Citratis	16 Cc.	4 fluidrachms.
Liquor Potassii Hydroxidi	1 Cc.	15 minims.
Liquor Sodæ Chlorinatæ	1 Cc.	15 minims.
Liquor Sodii Arsenatis	0. 2 Cc.	3 minims.
Liquor Sodii Hydroxidi	1 Cc.	15 minims.
Liquor Sodii Phosphatis Compositus	8 Cc.	2 fluidrachms.
Lithii Benzoas	1 Gm.	15 grains.
Lithii Bromidum	1 Gm.	15 grains.
Lithii Carbonas	0. 500 Gm. = 500 milligrammes.	7½ grains.
Lithii Citras	0. 500 Gm. = 500 milligrammes.	7½ grains.
Lithii Citras Effervescens	8 Gm.	120 grains.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Lithii Salicylas	1 Gm.	15 grains.
Lobelia	0. 500 Gm. = 500 milligrammes.	7½ grains.
Lupulinum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Magnesii Carbonas	3 Gm.	45 grains.
Magnesii Oxidum	2 Gm.	30 grains.
Magnesii Oxidum Ponderosum	2 Gm.	30 grains.
Magnesii Sulphas	16 Gm.	240 grains.
Magnesii Sulphas Effervescens	16 Gm.	240 grains.
Mangani Dioxidum Præcipitatum	0. 250 Gm. = 250 milligrammes.	4 grains.
Mangani Hypophosphis	0. 200 Gm. = 200 milligrammes.	3 grains.
Mangani Sulphas	0. 250 Gm. = 250 milligrammes.	4 grains.
Manna	16 Gm.	240 grains.
Marrubium	2 Gm.	30 grains.
Massa Ferri Carbonatis	0. 250 Gm. = 250 milligrammes.	4 grains.
Massa Hydrargyri	0. 250 Gm. = 250 milligrammes.	4 grains.
Mastiche	2 Gm.	30 grains.
Matico	4 Gm.	60 grains.
Matricaria	16 Gm.	240 grains.
Mel	4 Cc.	1 fluidrachm.
Mel Depuratum	4 Cc.	1 fluidrachm.

Mel Rosæ	4 Cc.	1 fluidrachm.
Mentha Piperita	4 Gm.	60 grains.
Mentha Viridis	4 Gm.	60 grains.
Menthol	0. 065 Gm. = 65 milligrammes.	1 grain.
Methylis Salicylas	1 Cc.	15 minims.
Methylthioninæ Hydrochloridum	0. 250 Gm. = 250 milligrammes.	4 grains.
Mezereum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Mistura Cretæ	16 Cc.	4 fluidrachms.
Mistura Ferri Composita	16 Cc.	4 fluidrachms.
Mistura Glycyrrhizæ Composita	8 Cc.	2 fluidrachms.
Mistura Rhei et Sodæ	4 Cc.	1 fluidrachm.
Morphina	0. 010 Gm. = 10 milligrammes.	⅙ grain.
Morphinæ Acetas	0. 015 Gm. = 15 milligrammes.	¼ grain.
Morphinæ Hydrochloridum	0. 015 Gm. = 15 milligrammes.	¼ grain.
Morphinæ Sulphas	0. 015 Gm. = 15 milligrammes.	¼ grain.
Moschus	0. 250 Gm. = 250 milligrammes.	4 grains.
Mucilago Acaciæ	16 Cc.	4 fluidrachms.
Mucilago Sassafras Medullæ	16 Cc.	4 fluidrachms.
Mucilago Tragacanthæ	16 Cc.	4 fluidrachms.
Mucilago Ulmi	16 Cc.	4 fluidrachms.
Myristica	0. 500 Gm. = 500 milligrammes.	7½ grains.
Myrrha	0. 500 Gm. = 500 milligrammes.	7½ grains.
Naphthalenum	0. 125 Gm. = 125 milligrammes.	2 grains.
Nux Vomica	0. 065 Gm. = 65 milligrammes.	1 grain.
Oleoresina Aspidii	2 Gm.	30 grains.
Oleoresina Capsici	0. 030 Gm. = 30 milligrammes.	½ grain.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Oleoresina Cubebæ	0. 500 Gm. = 500 milligrammes.	7½ grains.
Oleoresina Lupulini	0. 200 Gm. = 200 milligrammes.	3 grains.
Oleoresina Piperis	0. 030 Gm. = 30 milligrammes.	½ grain.
Oleoresina Zingiberis	0. 030 Gm. = 30 milligrammes.	½ grain.
Oleum Amygdalæ Amaræ	0. 03 Cc.	½ minim.
Oleum Amygdalæ Expressum	30 Cc.	1 fluidounce.
Oleum Anisi	0. 2 Cc.	3 minims.
Oleum Aurantii Corticis	0. 2 Cc.	3 minims.
Oleum Betulæ	1 Cc.	15 minims.
Oleum Cajuputi	0. 5 Cc.	8 minims.
Oleum Cari	0. 2 Cc.	3 minims.
Oleum Caryophylli	0. 2 Cc.	3 minims.
Oleum Chenopodii	0. 2 Cc.	3 minims.
Oleum Cinnamomi	0. 05 Cc.	1 minim.
Oleum Copaibæ	0. 5 Cc.	8 minims.
Oleum Coriandri	0. 2 Cc.	3 minims.
Oleum Cubebæ	0. 5 Cc.	8 minims.
Oleum Erigerontis	1 Cc.	15 minims.
Oleum Eucalypti	0. 5 Cc.	8 minims.
Oleum Fœniculi	0. 2 Cc.	3 minims.

Oleum Gaultheriæ	1 Cc.	15 minims.
Oleum Gossypii Seminis	16 Cc.	4 fluidrachms.
Oleum Hedeomæ	0. 2 Cc.	3 minims.
Oleum Juniperi	0. 2 Cc.	3 minims.
Oleum Lavandulæ Florum	0. 2 Cc.	3 minims.
Oleum Limonis	0. 2 Cc.	3 minims.
Oleum Lini	30 Cc.	1 fluidounce.
Oleum Menthæ Piperitæ	0. 2 Cc.	3 minims.
Oleum Menthæ Viridis	0. 2 Cc.	3 minims.
Oleum Morrhuæ	16 Cc.	4 fluidrachms.
Oleum Myristicæ	0. 2 Cc.	3 minims.
Oleum Olivæ	30 Cc.	1 fluidounce.
Oleum Picis Liquidæ	0. 2 Cc.	3 minims.
Oleum Pimentæ	0. 2 Cc.	3 minims.
Oleum Ricini	16 Cc.	4 fluidrachms.
Oleum Rosmarini	0. 2 Cc.	3 minims.
Oleum Sabinæ	0. 05 Cc.	1 minim.
Oleum Santali	0. 5 Cc.	8 minims.
Oleum Sassafras	0. 2 Cc.	3 minims.
Oleum Sinapis Volatile	0. 008 Cc.	⅛ minim.
Oleum Terebinthinæ Rectificatum	1 Cc.	15 minims.
Oleum Thymi	0. 2 Cc.	3 minims.
Oleum Tiglii	0. 05 Cc.	1 minim.
Opii Pulvis	0. 065 Gm. = 65 milligrammes.	1 grain.
Opium	0. 100 Gm. = 100 milligrammes.	1½ grains.
Opium Deodoratum	0. 065 Gm. = 65 milligrammes.	1 grain.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.		AVERAGE DOSE.	
		Metric System.	Approximate Equivalent Ordinary System.
Opium Granulatum		0. 065 Gm. = 65 milligrammes.	1 grain.
Pancreatinum		0. 500 Gm. = 500 milligrammes.	$7\frac{1}{2}$ grains.
Paraldehydum		2 Cc.	30 minims.
Pareira		2 Gm.	30 grains.
Pelletierinæ Tannas		0. 250 Gm. = 250 milligrammes.	4 grains.
Pepo		30 Gm.	1 ounce.
Pepsinum		0. 250 Gm. = 250 milligrammes.	4 grains.
Phenol		0. 065 Gm. = 65 milligrammes.	1 grain.
Phenol Liquefactum		0. 05 Cc.	1 minim.
Phenylis Salicylas		0. 500 Gm. = 500 milligrammes.	$7\frac{1}{2}$ grains.
Phosphorus		0. 0005 Gm. = 0. 5 milligramme.	$\frac{1}{128}$ grain.
Physostigma		0. 100 Gm. = 100 milligrammes.	$1\frac{1}{2}$ grains.
Physostigminæ Salicylas		0. 001 Gm. = 1 milligramme.	$\frac{1}{64}$ grain.
Physostigminæ Sulphas		0. 001 Gm. = 1 milligramme.	$\frac{1}{64}$ grain.
Phytolacca	Emetic	1 Gm.	15 grains.
	Alterative	0. 125 Gm. = 125 milligrammes.	2 grains.
Pilocarpinæ Hydrochloridum		0. 010 Gm. = 10 milligrammes.	$\frac{1}{6}$ grain.
Pilocarpinæ Nitras		0. 010 Gm. = 10 milligrammes.	$\frac{1}{6}$ grain.
Pilocarpus		2 Gm.	30 grains.
Pilulæ Aloes		2 pills.	

Pilulæ Aloes et Ferri	2 pills.	
Pilulæ Aloes et Mastiches	2 pills.	
Pilulæ Aloes et Myrrhæ	2 pills.	
Pilulæ Asafœtidæ	2 pills.	
Pilulæ Catharticæ Compositæ	2 pills.	
Pilulæ Catharticæ Vegetabiles	2 pills.	
Pilulæ Ferri Carbonatis	2 pills.	
Pilulæ Ferri Iodidi	2 pills.	
Pilulæ Laxativæ Compositæ	2 pills.	
Pilulæ Opii	1 pill.	
Pilulæ Phosphori	1 pill.	
Pilulæ Podophylli, Belladonnæ et Capsici	1 pill.	
Pilulæ Rhei Compositæ	2 pills.	
Pimenta	1 Gm.	15 grains.
Piper	0. 500 Gm. = 500 milligrammes.	7½ grains.
Piperina	0. 200 Gm. = 200 milligrammes.	3 grains.
Pix Liquida	0. 500 Gm. = 500 milligrammes.	7½ grains.
Plumbi Acetas	0. 065 Gm. = 65 milligrammes.	1 grain.
Podophyllum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Potassii Acetas	2 Gm.	30 grains.
Potassii Bicarbonas	2 Gm.	30 grains.
Potassii Bitartras .... Diuretic	2 Gm.	30 grains.
Potassii Bromidum	1 Gm.	15 grains.
Potassii Carbonas	1 Gm.	15 grains.
Potassii Chloras	0. 250 Gm. = 250 milligrammes.	4 grains.
Potassii Citras	1 Gm.	15 grains.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	**Approximate Equivalent Ordinary System.**
Potassii Citras Effervescens	4 Gm.	60 grains.
Potassii Cyanidum	0. 010 Gm. = 10 milligrammes.	⅙ grain.
Potassii Dichromas	0. 010 Gm. = 10 milligrammes.	⅙ grain.
Potassii et Sodii Tartras	8 Gm.	120 grains.
Potassii Ferrocyanidum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Potassii Hypophosphis	0. 500 Gm. = 500 milligrammes.	7½ grains.
Potassii Iodidum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Potassii Nitras	0. 500 Gm. = 500 milligrammes.	7½ grains.
Potassii Permanganas	0. 065 Gm. = 65 milligrammes.	1 grain.
Potassii Sulphas	2 Gm.	30 grains.
Prunus Virginiana	2 Gm.	30 grains.
Pulvis Acetanilidi Compositus	0. 500 Gm. = 500 milligrammes.	7½ grains.
Pulvis Aromaticus	1 Gm.	15 grains.
Pulvis Cretæ Compositus	2 Gm.	30 grains.
Pulvis Effervescens Compositus	1 set of two powders.	
Pulvis Glycyrrhizæ Compositus	4 Gm.	60 grains.
Pulvis Ipecacuanhæ et Opii	0. 500 Gm. = 500 milligrammes.	7½ grains.
Pulvis Jalapæ Compositus	2 Gm.	30 grains.
Pulvis Morphinæ Compositus	0. 500 Gm. = 500 milligrammes.	7½ grains.
Pulvis Rhei Compositus	2 Gm.	30 grains.

Pyrethrum	2 Gm.	30 grains.
Quassia	0. 500 Gm. = 500 milligrammes.	7½ grains.
Quercus	1 Gm.	15 grains.
Quinina	0. 250 Gm. = 250 milligrammes.	4 grains.
Quininæ Bisulphas	0. 250 Gm. = 250 milligrammes.	4 grains.
Quininæ Hydrobromidum	0. 250 Gm. = 250 milligrammes.	4 grains.
Quininæ Hydrochloridum	0. 250 Gm. = 250 milligrammes.	4 grains.
Quininæ Salicylas	0. 250 Gm. = 250 milligrammes.	4 grains.
Quininæ Sulphas	0. 250 Gm. = 250 milligrammes.	4 grains.
Resina	0. 250 Gm. = 250 milligrammes.	4 grains.
Resina Jalapæ	0. 125 Gm. = 125 milligrammes.	2 grains.
Resina Podophylli { Purgative	0. 015 Gm. = 15 milligrammes.	¼ grain.
Resina Podophylli { Laxative	0. 005 Gm. = 5 milligrammes.	1/10 grain.
Resina Scammonii	0. 200 Gm. = 200 milligrammes.	3 grains.
Resorcinol	0. 125 Gm. = 125 milligrammes.	2 grains.
Rhamnus Purshiana	1 Gm.	15 grains.
Rheum	1 Gm.	15 grains.
Rhus Glabra	1 Gm.	15 grains.
Rubus	1 Gm.	15 grains.
Sabal	1 Gm.	15 grains.
Sabina	0. 500 Gm. = 500 milligrammes.	7½ grains.
Safrolum	0. 3 Cc.	5 minims.
Salicinum	1 Gm.	15 grains.
Salvia	2 Gm.	30 grains.
Sanguinaria	0. 125 Gm. = 125 milligrammes.	2 grains.
Santoninum	0.065 Gm. = 65 milligrammes.	1 grain.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Sarsaparilla	2 Gm.	30 grains.
Sassafras	8 Gm.	120 grains.
Scammonium	0.250 Gm. = 250 milligrammes.	4 grains.
Scilla	0.125 Gm. = 125 milligrammes.	2 grains.
Scoparius	1 Gm.	15 grains.
Scopola	0.045 Gm. = 45 milligrammes.	3/4 grain.
Scopolaminæ Hydrobromidum	0.0005 Gm. = 0.5 milligramme.	1/128 grain.
Scutellaria	1 Gm.	15 grains.
Senega	1 Gm.	15 grains.
Senna	4 Gm.	60 grains.
Serpentaria	1 Gm.	15 grains.
Serum Antidiphthericum		3,000 units.
Immunizing dose for well persons		500 units.
Sinapis Alba, Emetic	8 Gm.	120 grains.
Sinapis Nigra, Emetic	8 Gm.	120 grains.
Sodii Acetas	1 Gm.	15 grains.
Sodii Arsenas	0.005 Gm. = 5 milligrammes.	1/10 grain.
Sodii Arsenas Exsiccatus	0.003 Gm. = 3 milligrammes.	1/20 grain.
Sodii Benzoas	1 Gm.	15 grains.
Sodii Bicarbonas	1 Gm.	15 grains.

Sodii Bisulphis	0.500 Gm. = 500 milligrammes.	7½ grains.
Sodii Boras	0.500 Gm. = 500 milligrammes.	7½ grains.
Sodii Bromidum	1 Gm.	15 grains.
Sodii Carbonas Monohydratus	0.250 Gm. = 250 milligrammes.	4 grains.
Sodii Chloras	0.250 Gm. = 250 milligrammes.	4 grains.
Sodii Chloridum . . . . Emetic	16 Gm.	240 grains.
Sodii Citras	1 Gm.	15 grains.
Sodii Hypophosphis	1 Gm.	15 grains.
Sodii Iodidum	0. 500 Gm. = 500 milligrammes.	7½ grains.
Sodii Nitras	1 Gm.	15 grains.
Sodii Nitris	0. 065 Gm. = 65 milligrammes.	1 grain.
Sodii Phenolsulphonas	0. 250 Gm. = 250 milligrammes.	4 grains.
Sodii Phosphas	2 Gm.	30 grains.
Sodii Phosphas Effervescens	8 Gm.	120 grains.
Sodii Phosphas Exsiccatus	1 Gm.	15 grains.
Sodii Pyrophosphas	2 Gm.	30 grains.
Sodii Salicylas	1 Gm.	15 grains.
Sodii Sulphas	16 Gm.	240 grains.
Sodii Sulphis	1 Gm.	15 grains.
Sodii Thiosulphas	1 Gm.	15 grains.
Sparteinæ Sulphas	0. 010 Gm. = 10 milligrammes.	⅕ grain.
Spigelia	4 Gm.	60 grains.
Spiritus Ætheris	4 Cc.	1 fluidrachm.
Spiritus Ætheris Compositus	4 Cc.	1 fluidrachm.
Spiritus Ætheris Nitrosi	2 Cc.	30 minims.
Spiritus Ammoniæ	1 Cc.	15 minims.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Spiritus Ammoniæ Aromaticus	2 Cc.	30 minims.
Spiritus Amygdalæ Amaræ	0.5 Cc.	8 minims.
Spiritus Anisi	4 Cc.	1 fluidrachm.
Spiritus Camphoræ	1 Cc.	15 minims.
Spiritus Chloroformi	2 Cc.	30 minims.
Spiritus Cinnamomi	2 Cc.	30 minims.
Spiritus Gaultheriæ	2 Cc.	30 minims.
Spiritus Glycerylis Nitratis	0.05 Cc.	1 minim.
Spiritus Juniperi	2 Cc.	30 minims.
Spiritus Juniperi Compositus	8 Cc.	2 fluidrachms.
Spiritus Lavandulæ	2 Cc.	30 minims.
Spiritus Menthæ Piperitæ	2 Cc.	30 minims.
Spiritus Menthæ Viridis	2 Cc.	30 minims.
Staphisagria	0.065 Gm. = 65 milligrammes.	1 grain.
Stillingia	2 Gm.	30 grains.
Stramonium	0.065 Gm. = 65 milligrammes.	1 grain.
Strontii Bromidum	1 Gm.	15 grains.
Strontii Iodidum	0.500 Gm. = 500 milligrammes.	7½ grains.
Strontii Salicylas	1 Gm.	15 grains.
Strophanthinum	0.0003 Gm. = 0.3 milligramme.	$\frac{1}{200}$ grain.

Strophanthus	0.065 Gm. = 65 milligrammes.	1 grain.
Strychnina	0.001 Gm. = 1 milligramme.	$\frac{1}{64}$ grain.
Strychninæ Nitras	0.001 Gm. = 1 milligramme.	$\frac{1}{64}$ grain.
Strychninæ Sulphas	0.001 Gm. = 1 milligramme.	$\frac{1}{64}$ grain.
Styrax	1 Gm.	15 grains.
Sulphonethylmethanum	1 Gm.	15 grains.
Sulphonmethanum	1 Gm.	15 grains.
Sulphur Lotum	4 Gm.	60 grains.
Sulphur Præcipitatum	4 Gm.	60 grains.
Sulphur Sublimatum	4 Gm.	60 grains.
Sumbul	2 Gm.	30 grains.
Syrupus Acidi Hydriodici	4 Cc.	1 fluidrachm.
Syrupus Amygdalæ	4 Cc.	1 fluidrachm.
Syrupus Calcii Lactophosphatis	8 Cc.	2 fluidrachms.
Syrupus Calcis	2 Cc.	30 minims.
Syrupus Ferri Iodidi	1 Cc.	15 minims.
Syrupus Ferri, Quininæ et Strychninæ Phosphatum	4 Cc.	1 fluidrachm.
Syrupus Hypophosphitum	8 Cc.	2 fluidrachms.
Syrupus Hypophosphitum Compositus	8 Cc.	2 fluidrachms.
Syrupus Ipecacuanhæ — Expectorant	1 Cc.	15 minims.
Syrupus Ipecacuanhæ — Emetic	15 Cc.	4 fluidrachms.
Syrupus Krameriæ	4 Cc.	1 fluidrachm.
Syrupus Lactucarii	8 Cc.	2 fluidrachms.
Syrupus Picis Liquidæ	4 Cc.	1 fluidrachm.
Syrupus Pruni Virginianæ	4 Cc.	1 fluidrachm.
Syrupus Rhei	8 Cc.	2 fluidrachms.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	Approximate Equivalent Ordinary System.
Syrupus Rhei Aromaticus	8 Cc.	2 fluidrachms.
Syrupus Rubi	4 Cc.	1 fluidrachm.
Syrupus Sarsaparillæ Compositus	16 Cc.	4 fluidrachms.
Syrupus Scillæ	2 Cc.	30 minims.
Syrupus Scillæ Compositus	2 Cc.	30 minims.
Syrupus Senegæ	4 Cc.	1 fluidrachm.
Syrupus Sennæ	4 Cc.	1 fluidrachm.
Syrupus Tolutanus	16 Cc.	4 fluidrachms.
Syrupus Zingiberis	16 Cc.	4 fluidrachms.
Tamarindus	16 Gm.	240 grains.
Taraxacum	8 Gm.	120 grains.
Terebenum	0. 5 Cc.	8 minims.
Terpini Hydras	0. 125 Gm. = 125 milligrammes.	2 grains.
Thymol	0. 125 Gm. = 125 milligrammes.	2 grains.
Tinctura Aconiti	0. 6 Cc.	10 minims.
Tinctura Aloes	2 Cc.	30 minims.
Tinctura Aloes et Myrrhæ	2 Cc.	30 minims.
Tinctura Arnicæ	1 Cc.	15 minims.
Tinctura Asafœtidæ	1 Cc.	15 minims.
Tinctura Aurantii Amari	4 Cc.	1 fluidrachm.

Tinctura Aurantii Dulcis	4 Cc.	1 fluidrachm.
Tinctura Belladonnæ Foliorum	0.5 Cc.	8 minims.
Tinctura Benzoini	1 Cc.	15 minims.
Tinctura Benzoini Composita	2 Cc.	30 minims.
Tinctura Calumbæ	4 Cc.	1 fluidrachm.
Tinctura Cannabis Indicæ	0.6 Cc.	10 minims.
Tinctura Cantharidis	0.3 Cc.	5 minims.
Tinctura Capsici	0.5 Cc.	8 minims.
Tinctura Cardamomi	4 Cc.	1 fluidrachm.
Tinctura Cardamomi Composita	4 Cc.	1 fluidrachm.
Tinctura Cimicifugæ	4 Cc.	1 fluidrachm.
Tinctura Cinchonæ	4 Cc.	1 fluidrachm.
Tinctura Cinchonæ Composita	4 Cc.	1 fluidrachm.
Tinctura Cinnamomi	2 Cc.	30 minims.
Tinctura Colchici Seminis	2 Cc.	30 minims.
Tinctura Digitalis	1 Cc.	15 minims.
Tinctura Ferri Chloridi	0.5 Cc.	8 minims.
Tinctura Gallæ	4 Cc.	1 fluidrachm.
Tinctura Gambir Composita	4 Cc.	1 fluidrachm.
Tinctura Gelsemii	0.5 Cc.	8 minims.
Tinctura Gentianæ Composita	4 Cc.	1 fluidrachm.
Tinctura Guaiaci	4 Cc.	1 fluidrachm.
Tinctura Guaiaci Ammoniata	2 Cc.	30 minims.
Tinctura Hydrastis	4 Cc.	1 fluidrachm.
Tinctura Hyoscyami	1 Cc.	15 minims.
Tinctura Iodi	0.1 Cc.	1½ minims.

Table of average doses, as given by the U. S. Pharmacopœia, Eighth Decennial Revision—Continued.

PREPARATION.		AVERAGE DOSE.	
		Metric System.	Approximate Equivalent Ordinary System.
Tinctura Ipecacuanhæ et Opii		0.5 Cc.	8 minims.
Tinctura Kino		4 Cc.	1 fluidrachm.
Tinctura Krameriæ		4 Cc.	1 fluidrachm.
Tinctura Lactucarii		2 Cc.	30 minims.
Tinctura Lavandulæ Composita		2 Cc.	30 minims.
Tinctura Lobeliæ	Expectorant	1 Cc.	15 minims.
	Emetic	4 Cc.	1 fluidrachm.
Tinctura Moschi		4 Cc.	1 fluidrachm.
Tinctura Myrrhæ		1 Cc.	15 minims.
Tinctura Nucis Vomicæ		0.6 Cc.	10 minims.
Tinctura Opii		0.5 Cc.	8 minims.
Tinctura Opii Camphorata		8 Cc.	2 fluidrachms.
Tinctura Opii Deodorati		0.5 Cc.	8 minims.
Tinctura Physostigmatis		1 Cc.	15 minims.
Tinctura Quassiæ		2 Cc.	30 minims.
Tinctura Rhei		4 Cc.	1 fluidrachm.
Tinctura Rhei Aromatica		2 Cc.	30 minims.
Tinctura Sanguinariæ		1 Cc.	15 minims.
Tinctura Scillæ		1 Cc.	15 minims.
Tinctura Serpentariæ		4 Cc.	1 fluidrachm.

Tinctura Stramonii	0.5 Cc.	8 minims.
Tinctura Strophanthi	0.5 Cc.	8 minims.
Tinctura Tolutana	2 Cc.	30 minims.
Tinctura Valerianæ	4 Cc.	1 fluidrachm.
Tinctura Valerianæ Ammoniata	2 Cc.	30 minims.
Tinctura Veratri	1 Cc.	15 minims.
Tinctura Zingiberis	2 Cc.	30 minims.
Triticum	8 Gm.	120 grains.
Trituratio Elaterini	0.030 Gm. = 30 milligrammes.	½ grain.
Uva Ursi	2 Gm.	30 grains.
Valeriana	2 Gm.	30 grains.
Vanilla	1 Gm.	15 grains.
Vanillinum	0.030 Gm. = 30 milligrammes.	½ grain.
Veratrina	0.002 Gm. = 2 milligrammes.	$\frac{1}{30}$ grain.
Veratrum	0.125 Gm. = 125 milligrammes.	2 grains.
Viburnum Opulus	2 Gm.	30 grains.
Viburnum Prunifolium	2 Gm.	30 grains.
Vinum Antimonii	1 Cc.	15 minims.
Vinum Cocæ	16 Cc.	4 fluidrachms.
Vinum Colchici Seminis	2 Cc.	30 minims.
Vinum Ergotæ	8 Cc.	2 fluidrachms.
Vinum Ferri	8 Cc.	2 fluidrachms.
Vinum Ferri Amarum	8 Cc.	2 fluidrachms.
Vinum Ipecacuanhæ	1 Cc.	15 minims.
Vinum Opii	0.5 Cc.	8 minims.
Xanthoxylum	2 Gm.	30 grains.

Table of average doses, as given by the U. S. Pharmacopœia, eighth decennial revision—Continued.

PREPARATION.	AVERAGE DOSE.	
	Metric System.	**Approximate Equivalent Ordinary System.**
Zinci Acetas	0. 125 Gm. = 125 milligrammes.	2 grains.
Zinci Bromidum	0. 125 Gm. = 125 milligrammes.	2 grains.
Zinci Iodidum	0. 065 Gm. = 65 milligrammes.	1 grain.
Zinci Oxidum	0. 250 Gm. = 250 milligrammes.	4 grains.
Zinci Phenolsulphonas	0. 125 Gm. = 125 milligrammes.	2 grains.
Zinci Sulphas Emetic	1 Gm.	15 grains.
Zinci Valeras	0. 125 Gm. = 125 milligrammes.	2 grains.
Zingiber	1 Gm.	15 grains.

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